SPECIAL REPORT

BLUEPRINT FOR '61

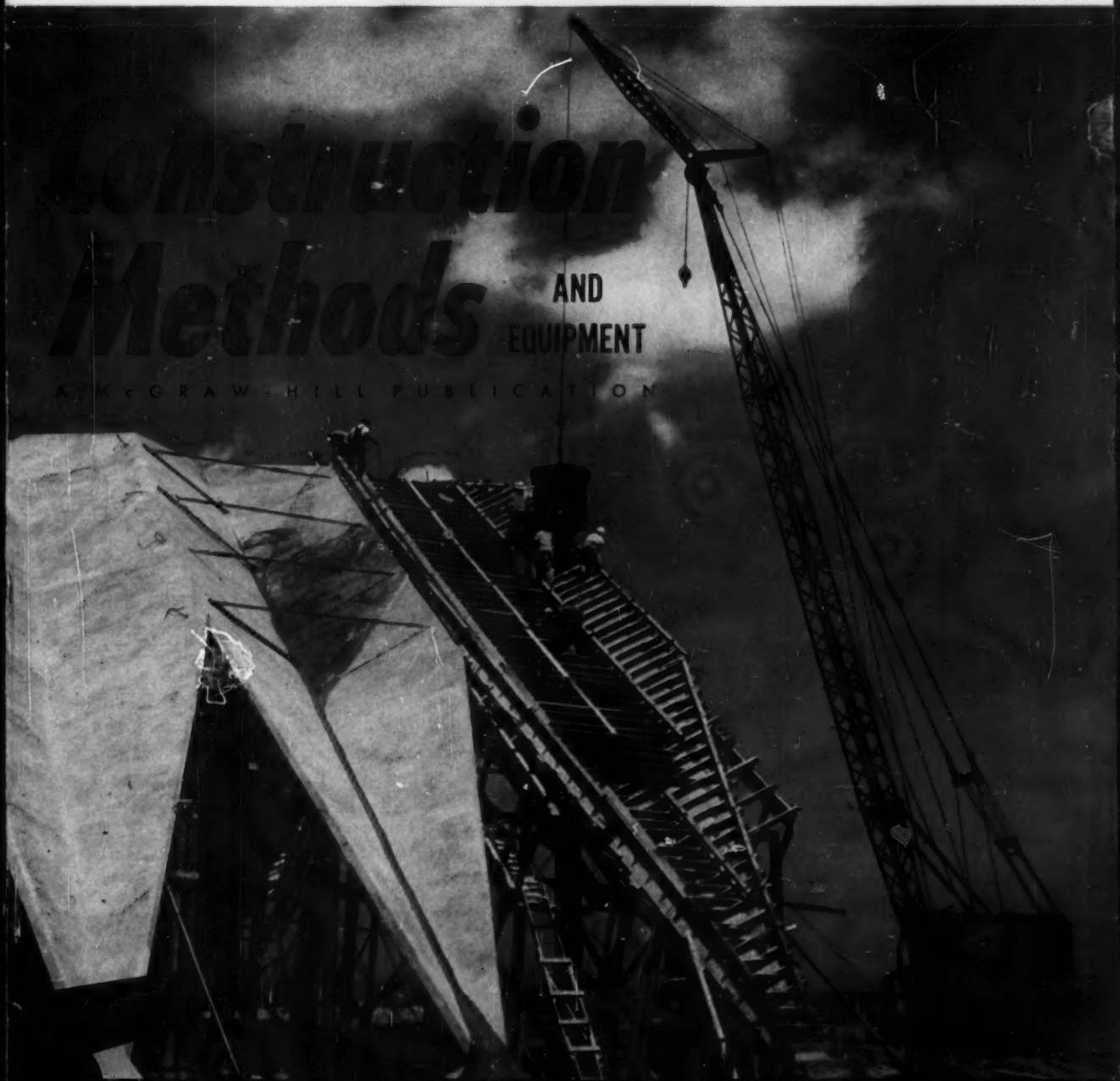
BUSINESS
LABOR
MATERIALS
METHODS
EQUIPMENT

Begins on page 55

JANUARY, 1961

PRICE $1.00

Construction Methods AND EQUIPMENT
A McGRAW-HILL PUBLICATION



Crawler crane places concrete for folded plate structure in Georgia.

CONTENTS, PAGE 4

Builders of the world's largest drydock *standardize on Yellow Strand*

Almost every conceivable excavation technique is in evidence as the world's largest drydock begins to take shape at Puget Sound Naval Base: conveyors, draglines, bulldozers, and even a sluicing system patterned after the Placer Mining done in Alaska.

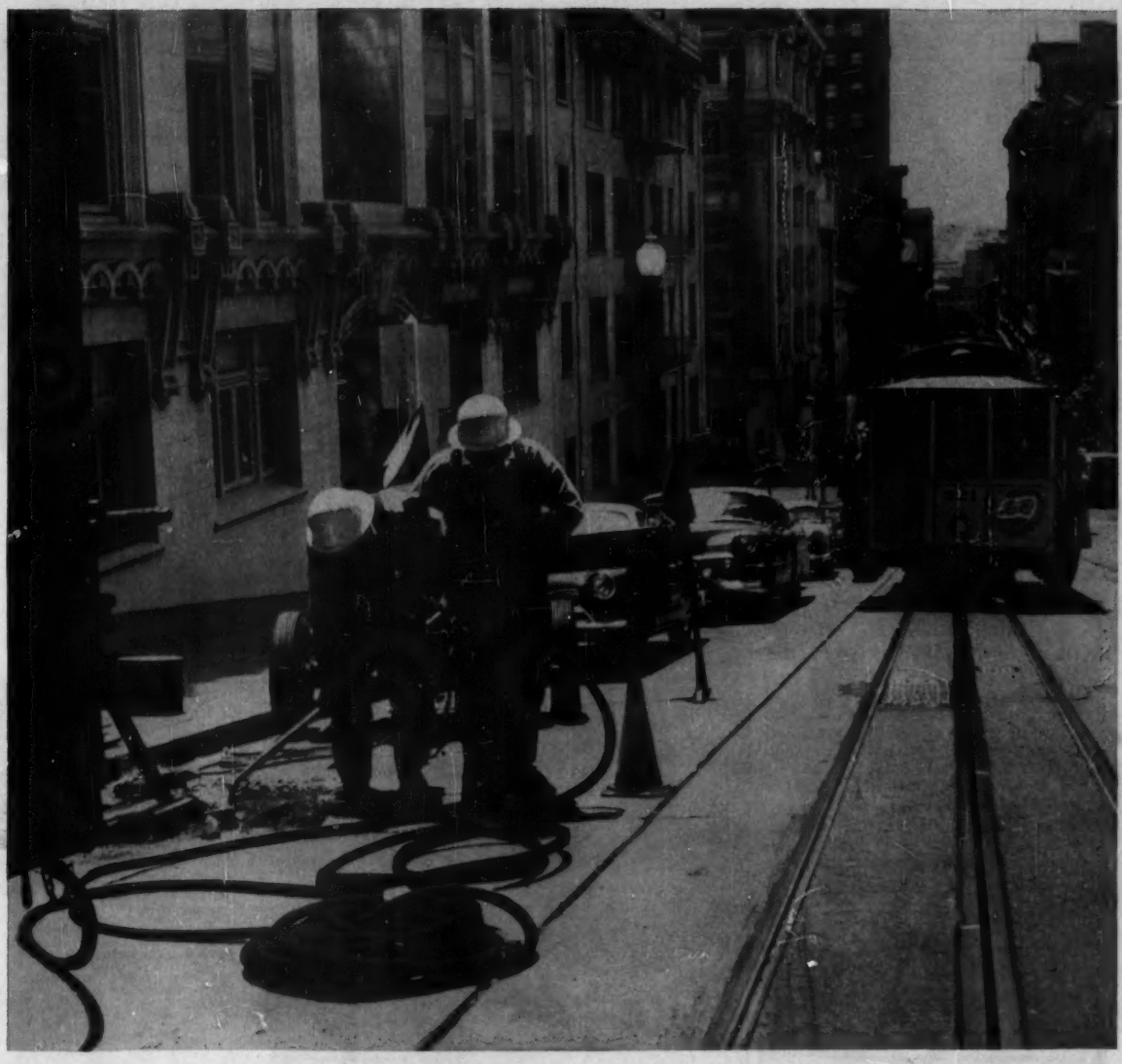
And wherever you see earthmoving operations, you'll find Broderick & Bascom Yellow Strand Wire Rope! The joint venture contracting firms of Manson, Jones, Perini and Osberg have standardized on Yellow Strand at this job. One dependable wire rope—one dependable source is important as they race the clock.

And before this mammoth undertaking is completed, Yellow Strand will have played a significant role in dredging out 630,942 cubic yards of dirt, constructing gravel fill coffer dams containing 1,300,000 cubic yards of sand and gravel, and pouring nearly 185,000 cubic yards of concrete.

When this giant repair berth is completed, it will be 1180′ long, 180′ wide and 61′ deep and hold 96 million gallons of water.

On large or small projects, you can depend upon Yellow Strand Wire Rope. Get your supply at your nearest local distributor—it is always on hand. *Broderick & Bascom Rope Co., 4203 Union Boulevard, St. Louis 15, Missouri.*

Yellow Strand®
WIRE ROPE



Probably more air has whistled through this brand of hose than any other

IT'S B.F.GOODRICH TYPE 50—just about the oldest brand name in air hose. And, after all these years, still our best seller. It's the choice of about 8 out of 10 of our air hose customers.

Why do customers keep reordering Type 50 hose—year after year? Probably because it stands up better under rough treatment—resists tearing, cutting, gouging . . . takes more bending, twisting, and greater "surge" loads than most other air hose. What's more, the special rubber lining in Type 50 air hose withstands hot air, won't harden and crack, doesn't break into loose, gummy particles to clog tools.

If you've never used Type 50, why not give it a try? Your B.F.Goodrich distributor can answer your questions about sizes, specifications, prices. And, as a factory-trained specialist in rubber products, can also tell you about the many other kinds of hose developed by BFG to get jobs done faster and easier. *B.F.Goodrich Industrial Products Co., Dept. M-939, Akron 18, Ohio.*

AIR HOSE BY B.F.Goodrich

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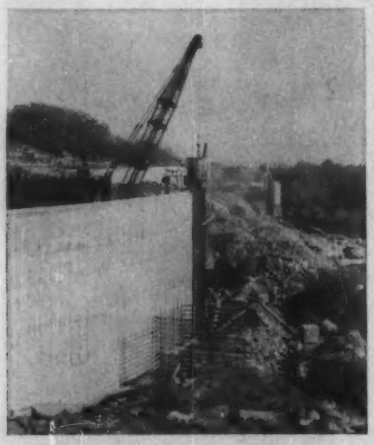
PROGRESS IN CONCRETE



28 Ft. High, 320 Ft. Diam. Concrete Water Tanks

. . . Erected in 63 Ft. Sections with Symons Steel-Ply Forms

Springfield, Massachusetts doubled its pure water reservoir capacity by addition of the two largest prestressed concrete tanks ever to be constructed in America. The tanks are located on top of Provin Mountain, about 5 miles west of the city.

Diameter of each tank is 320 feet and the walls are 28 feet high. Walls were erected in sixteen sections, with each ganged section being 63 feet wide.

General view of the two big reservoirs. Designed by Bogert and Childs of New York City.

After each pour, Symons Steel-Ply Forms were backed off and swung over to the next section for pouring. Construction was handled by the joint venture firms of Fruin-Colnan Contracting Co., Inc., St. Louis, Mo. and C. & C. Construction Co., Fort Wayne, Indiana.

For the complete story on *America's Two Largest Water Tanks*, just send in your request on your company letterhead. Symons Steel-Ply Forms are rented with purchase option.

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Construction Methods AND EQUIPMENT

JANUARY, 1961

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CONSTRUCTION METHODS AND EQUIPMENT was founded in 1919, under the name of SUCCESSFUL METHODS, by the Manufacturers Publicity Bureau, Inc., of Chicago, representing a group of non-competing manufacturers of construction equipment. Charles R. Thomas, editor of the first few issues, was succeeded by William Jabine.

In 1926 the McGraw-Hill Publishing Company, Inc., of New York, purchased the publication, changing its name to SUCCESSFUL CONSTRUCTION METHODS in November of that year, to CONSTRUCTION METHODS in May 1927, to CONSTRUCTION METHODS AND EQUIPMENT in December 1936, and to CONSTRUCTION METHODS in October 1939. In July 1949, the name CONSTRUCTION METHODS AND EQUIPMENT was resumed. All rights to the foregoing titles are reserved by the publishers.

Robert K. Tomlin was appointed editor of CONSTRUCTION METHODS in January 1923, was succeeded by Waldo G. Bowman in January 1946, by Harold W. Richardson in February 1949, and by Henry T. Peres in June 1954.

MEMBER

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ABP

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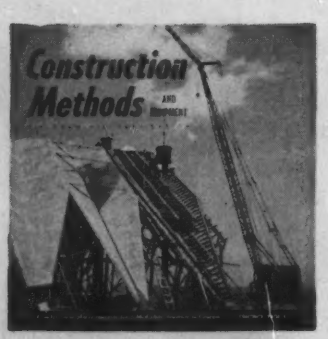

ON THE COVER

A Northwest crane with ½-yd bucket pours concrete through hole in top of sandwich forms that are used to cast pairs of folded plates over a swimming pool in Georgia. Coite Somers Co. of Vidalia, Ga., built one set of forms and used it 13 times. Bottom form panels are hinged at the center. When ready to move, they collapse and ride to the next location on roller bearings set atop H-beams supported by timber poles. *See story beginning on page 80.*

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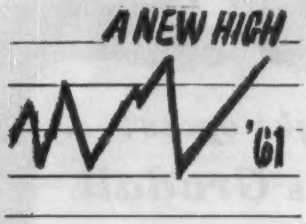
NEXT MONTH

To build piers for the Duluth-Superior Bridge, the contractor had to overcome foundation conditions that varied from one extreme to the other. At one location, wellpoints were needed to dewater sheetpile cofferdams that were sunk through a waterbearing seam of peat-like material. For other piers, pre-boring with an auger was necessary to sink piles through dense clay that defied pile hammers. Above ground, piers required three different types of adjustable steel forms.

Photo Credits — 43 Robert Pastner, 4 (right, top) and 62 Buz Wilburn, 142 (left, bottom) Drennen.

SPECIAL REPORT

BLUEPRINT FOR '61



BUSINESS

Awards last year set all-time high and 1961 will be even better

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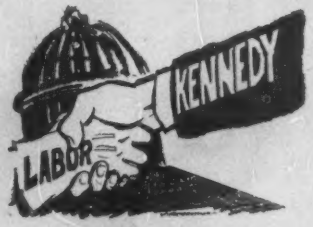

LABOR

Unions hope that Kennedy administration will push their bills

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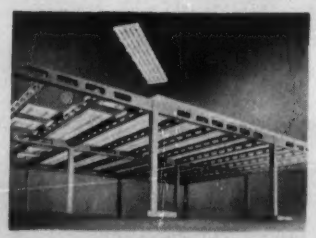

MATERIALS

Suppliers attempt to hold the price line for steel and cement

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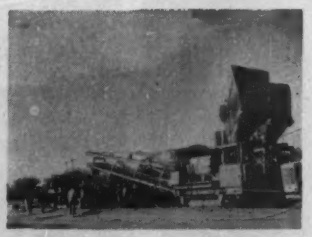

METHODS

New specifications will catch up with new techniques

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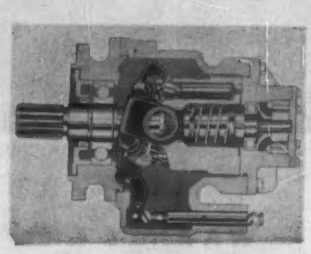

EQUIPMENT

Manufacturers will improve components for standard rigs

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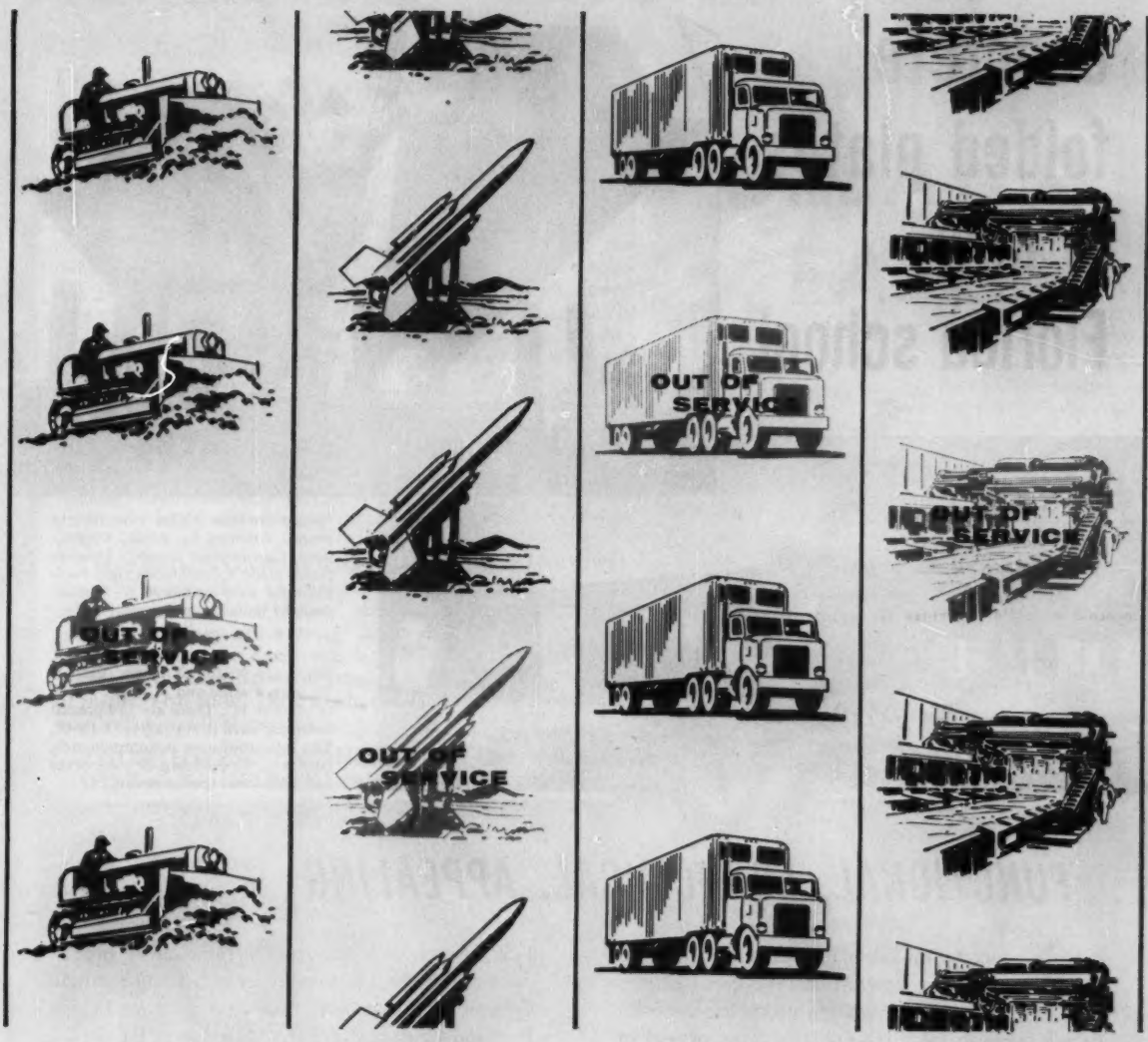
EARTH COMPACTION series continues 90



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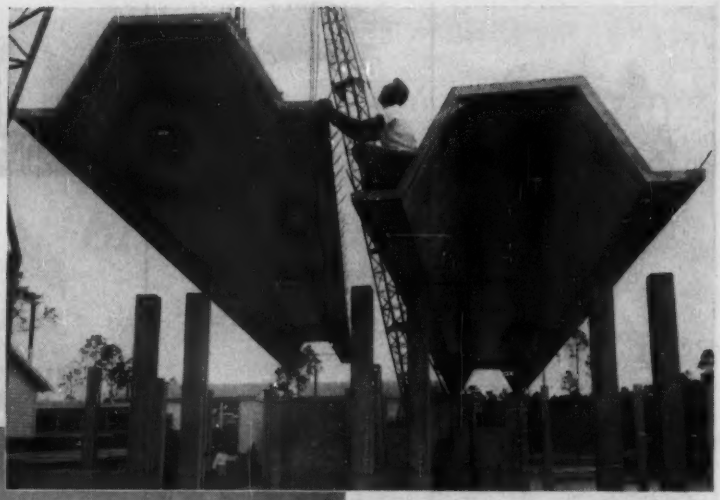
Concrete folded plates in new Florida school



Folded concrete plates were tied to precast columns by welded connections. Cast-in-place concrete between plates made a continuous rigid roof. Columns were anchored to foundations by bolted connections.

There are 90 folded plates. Each is 72′ long 9′ wide and 3″ thick. Depth of plate is 34″. There are 116 precast columns. Each is 9½″ x 9½″ x 11′-0″. The total roof area is approximately 60,000 sq. ft. covering 40 classrooms and additional special rooms.

. . . FUNCTIONAL, ECONOMICAL, APPEALING

Precast concrete folded plates gave the State of Florida something new in school construction. The simplicity of this pleasing geometric concrete design made it possible to complete the project in the 10 months allowed and to stay within the school district budget. The result is a sturdy fireproof structure for some 600 pupils, that will require little or no maintenance.

In the manufacture of the precast folded plates and supporting columns, Concrete Structures, Inc. used Lehigh Early Strength Cement for maximum production efficiency. Units were removed and forms were ready for reuse in less than half the time required with normal cement.

For modern concrete construction, either precast or cast-in-place, chances are Lehigh Early Strength Cement can save you time and money. Lehigh Portland Cement Company, Allentown, Pa.

Owner: Dade County Board of Public Instruction
Architects: Robert B. Browne
George F. Reed, Associate
Design Engineer: Walter C. Harry
Consulting Engineer: H. J. Ross Associates
Contractor: Stobs Brothers Construction Co.
All of Miami, Florida
Precast Concrete: Concrete Structures, Inc., North Miami, Florida

LEHIGH CEMENTS

Circle 7 on Reader Service Card ➤

Handle the "TRICKY" jobs with GREATER EASE!

IT isn't *this* or *that* that gets a crane job done. Your crane problem today is different tomorrow. The machine you need had better not be a one-feature rig.

Here's a bridge job! Four men on the forms! Reinforcing to set and a pour to make! A situation that calls for perfection in operation and smooth response to the operator's need for performance. Northwest Cranes bring you the finest combination of advantages available for the tricky jobs. This operator has smooth, dependable booming guaranteed by the rugged, Independent High Speed Boom Hoist. He can boom up and down continuously under heavy load without over-heating or fading. He has a heavy duty assembly designed for varied crane work.

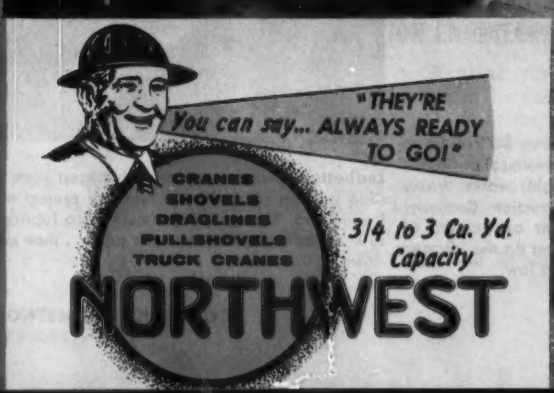
In his hand he has the true "feel" of his load. He knows what the hook is doing! With the Northwest Feather-Touch Clutch Control power does the work.

And the swing—Uniform Pressure Swing Clutches as on all Northwests. He can move that boom tip accurately without the jerk and jar so often present with outside or inside band clutches, a mighty important advantage with long booms.

These features combine with the many other Northwest Crane features that enable a Northwest to do a better, safer job on a wider variety of work in less time and at lower cost. They are among the many things that make the Northwest the finest machine of its kind.

Details make a rig—sometimes fine details are a source of profit. You should know what they are. Let a Northwest man tell you all about them.

NORTHWEST ENGINEERING COMPANY
1503 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois



LUBE LOGIC Five ways to

Now's the time for battery check-ups

With cold weather ahead, your batteries will soon work harder than ever. Here's how you can help make sure they're up to it:

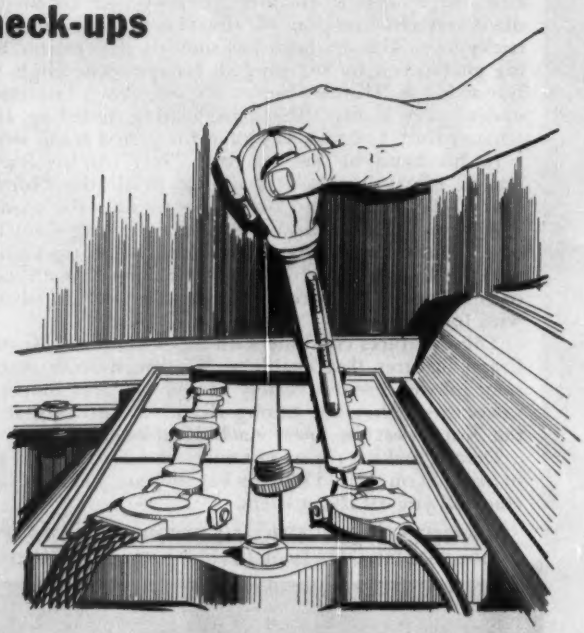
Inspection

- Inspect battery case for cracks and leaks. See that vents in cell caps are open.
- Check battery posts and cable clamps for looseness, breakage or corrosion.
- Using distilled water, bring electrolyte in each cell up to level indicated in cell opening.

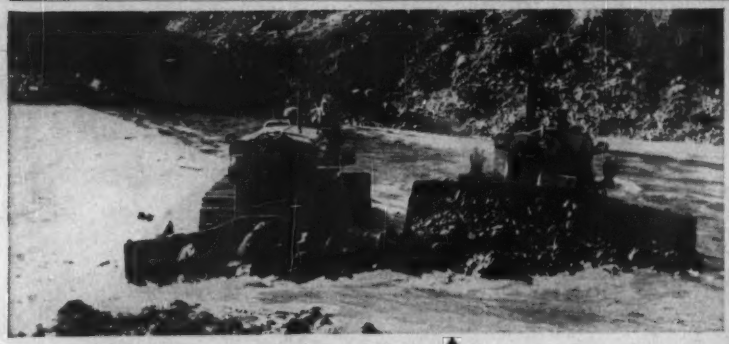
Hydrometer test for specific gravity

- Use a temperature-corrected hydrometer to test the state of battery charge. Make sure battery has not been recently fast-charged, nor water added.
- Draw enough fluid from each cell to raise float off the bottom of the hydrometer tube. Holding hydrometer straight up-and-down, take eye-level reading of the neck of the float. Repeat for each cell.
- Note the temperature, and correct hydrometer reading by subtracting 0.004 from the reading for each 10°F. below 80°F. (Example: If hydrometer reads 1.280, and temperature is 70°F., corrected reading would be 1.280 – 0.004 or 1.276.

Normal state of charge for 12-volt battery is 1.260 to 1.280 specific gravity. For a 6-volt battery, 1.265 to 1.290 specific gravity.

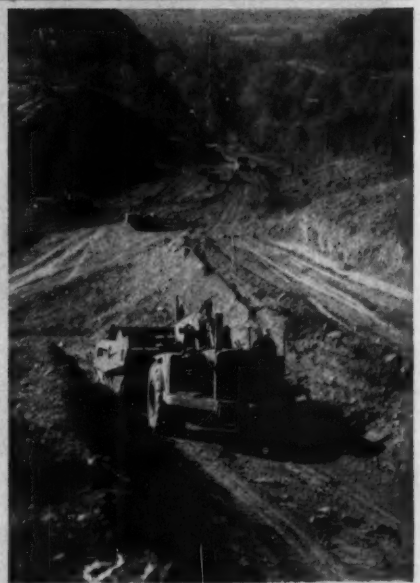


LEADING CONTRACTORS—EVERYWHERE—RELY ON TEXACO LUBRICATION



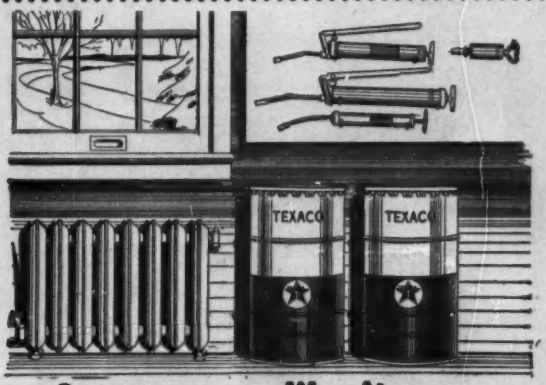
▲ **Isbell Construction Company** bulldozers remove reefs from river channel on Truckee River Flood Control project near Sparks, Nev. Isbell heartily endorses Texaco's Simplified Lubrication Plan.

◀ **Interstate Highway 80 Project** at Colfax, Iowa. Texaco Engineer E. A. Rolwes (right) works closely with Mott Construction Company on the important assignment of keeping equipment on the job and maintenance costs low.



▲ **Ledbetter-Johnson** gouges out largest rock cut (306 ft.) east of Rockies in highway project near Dalton, Ga. This company uses Texaco lubricants to keep their equipment on the job . . . their costs down.

ease winter maintenance



Grease guns like it warm

Store grease guns this way, properly racked to avoid damage, and they'll give you much better service. Incidentally, lubricants like to be stored warm, too.

Warm up the guns if they're too cold to pump the lubricant. Best way is to bring them into a warm place far enough in advance of use. Don't ever attempt to warm them up by direct application of heat.

Save the engine— not the anti-freeze

Go slow on using last year's anti-freeze. Although it might still give good protection against freezing, chances are those chemical additives that protect the cooling systems of your engines against rust and corrosion have lost their punch. Your best bet, after draining and thoroughly flushing the radiators, is to fill them up with fresh new anti-freeze — such as Texaco P-T Anti-Freeze.

"Easy does it"... after an oil change

When an engine's crankcase is drained — so is the oil pump's intake sump and pipe. And when the engine starts up, the oil pump must first suck up a lot of air before it starts chewing oil.

To avoid possible damage to the engine, idle it first at low speed. The oil pressure should begin picking up in a matter of seconds and reach normal readings within several minutes. Wait until it does — before you start working the engine.

All about mobile lube rigs

- How to make good lube rigs
- How to use lube records to make rigs more valuable
- Special purpose lube rigs
- Pros and cons of mobile and centralized lubrication

These are just a few of the facts about mobile lube rigs you'll find discussed in the March 1960 issue of Texaco's *Lubrication* magazine. We've devoted the whole issue to it —and we'll send you a copy *free*. Write today to Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. CM-21.

TEXACO LUBRICATION ENGINEERS

From time to time, we'll bring you "sleepers" like these—little angles that can mean big savings in time and money. But for any specific lubrication problem, call on your local Texaco man. He's your *best* source of money-saving lubrication ideas. Remember, "Lubrication is a major factor in cost control."

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B.F.Goodrich helps unlock Ohio River traffic jam

WITH TIRES, HOSE AND OTHER PRODUCTS, B.F.GOODRICH SPEEDS CONSTRUCTION OF NEW NAVIGATION SYSTEM

Time was when traffic was slowed by 4 separate locks in a 95-mile stretch of the Ohio River. But the Capt. Anthony Meldahl Locks and Dam will flood them. This project is part of a modern navigation system that will reduce 13 locks and dams to 3, and lockage time from 19½ hours to 1½ hours.

Groves Ventures Company of Minneapolis, Minnesota, a joint venture sponsored by S. J. Groves & Sons Co., is on the job with an army of B.F.Goodrich tires and always-available BFG tire service. Rock Service tires, for example, haul 33-ton loads of concrete from batch plant to lock forms over rock-strewn roads. No problem for these BFG giants, though. They're available in new

33 TONS OF CONCRETE leave batch plant (photo at left) bound for lock pouring area (below). Locks will be 110′ x 1200′, will require over 670-thousand cubic yards of concrete, will cost over $25-million. B.F.Goodrich Rock Service and Rock Rib tires haul concrete 16 hours a day, 6 days a week down 2 long grades into the cofferdam excavation. Roads are covered with crushed rock and gravel, and often with 6″ of water. Yet BFG tires give exceptional service, Groves Ventures reports.

B.F.GOODRICH ON-THE-JOB TIRE SERVICE keeps Groves Ventures equipment rolling on lock project near Chilo, Ohio—keeps tire costs at a minimum. The BFG Servicemobile and repair shop are manned by tire experts, whose workmanship prompts Project Manager W. J. Green to write, "B.F.Goodrich service and repair facilities have done an excellent job of covering our needs."

NO STING IN THIS STEAM HOSE, used to cure concrete at Capt. Anthony Meldahl locks. It's Burstproof hose, made of BFG-developed heat-resistant rubber with layers of braided wire reinforcement. It can't explode. Supplying Groves Ventures with hose, belting and protective clothing—as well as tires—is all part of the BFG Unified Contractor Program. Contractors benefit from lower costs and better rubber products' service with this new BFG program.

Cut Protected compound that defies tire-killing rock.

B.F.Goodrich Flex-Rite Nylon cord construction withstands double the impact of ordinary materials, resists heat blowouts and flex breaks. Result: more retreadable tires. No wonder Groves Ventures specifies BFG tires.

You'll find B.F.Goodrich hose, protective clothing and other products at work here—all part of the BFG Unified Contractor Program that helps contractors cut costs and get better service from rubber products. Call your nearby B.F.Goodrich Smileage dealer (listed under Tires in the Yellow Pages). He has the know-how to help make your next contract more profitable. *The B.F.Goodrich Company, Akron 18, Ohio.*

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment**

B.F.Goodrich

Circle **11** *on Reader Service Card*

Construction News From Washington

Washington, D.C.
January, 1961

Kennedy's Men Called 'Intelligent' Spenders

Kennedy's department heads—who will control hundreds of millions of dollars of construction spending—would probably call themselves "intelligent spenders." Certainly none of them is as concerned as Eisenhower and his officials were over the dangers of federal spending and an unbalanced budget.

In general, their stand will be that it is sound economics as well as sound politics for the federal government to invest in needed public works projects.

David E. Bell, the new Budget Director, will be at least as powerful as Eisenhower's men have been in the same post. But Bell will see the need—as Kennedy does—of spending to develop roads, dams, harbors, and power facilities.

Abraham Ribicoff, Connecticut governor who becomes secretary of Health-Education and Welfare, will urge that more funds be spent on school construction, sewage treatment plants, hospitals, air pollution, and other big-city problems.

Luther Hodges, the new Commerce secretary, learned during his years as governor of North Carolina the benefits of a federal building program, and the ways in which federal policies can help business expand.

Stewart L. Udall, new secretary of Interior, has the background to press effectively for more public works projects—reclamation, hydro-power, flood control, and the like. He also is anxious to rush demonstration plants that convert salt water to fresh, a program that Eisenhower also supported. Udall was a house member from Arizona.

Investigators Rehash Highway 'Scandals'

A continuation of the "watch dog" investigations into the federal highway construction program seems certain.

Rep. John A. Blatnik's house subcommittee last month wound up several days of investigation into allegations of payola to Florida state engineers by contractors who won highway construction awards.

Much of the information put on the record in Washington had already become public during an earlier investigation by a committee of the Florida legislature.

However, the committee wanted to prove to the new Congress that it should be continued—that it has evidence of alleged misdeeds and lax supervision by state highway departments in several other states.

There's little doubt that the committee's probe will continue during the months ahead.

GOODYEAR

Best Protection against Rust and Corrosion

Goodyear Rims with exclusive Bond-a-Coat finish

Note condition of rims after standard 48-hour ASTM salt-spray test. Exclusive Goodyear process thoroughly prepares the raw metal surface.

The above pictures clearly show the protective effect of Goodyear's exclusive process—Bond-a-Coat.

This unique finish—originally proved on Goodyear Agricultural Rims—keeps rims from rusting. More than that, it protects tires, too—helps you get maximum mileage out of every tire you buy.

Bond-a-Coat is just one of the reasons why you'll find it pays to specify Goodyear Rims, both for replacement and on new equipment. Some of the others:

Unusual strength: Thanks to special designs and closer tolerances, balance and alignment are greatly improved. As a result Goodyear's present-day rims are suited for today's needs.

Job-Fitted: Goodyear Rims are job-fitted. Result: less tread cracking, tread wear, reduced sidewall and bead failure.

Special tools: Goodyear provides both hydraulic and hand tools especially made for modern equipment.

Talk it over with your local Goodyear Rim Distributor. He'll help you pick out the type and size of rim best suited to your needs. Or write: Goodyear, Metal Products Division, Akron 16, Ohio.

This is how Goodyear stores its rims—outdoors—thanks to Bond-a-Coat.

Your tires go farther on RIMS by

GOODYEAR

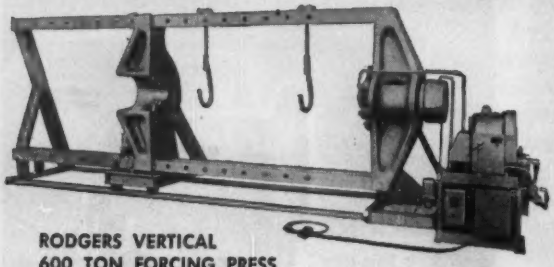
MORE TONS ARE CARRIED ON GOODYEAR RIMS THAN ON ANY OTHER KIND

Circle 13 on Reader Service Card

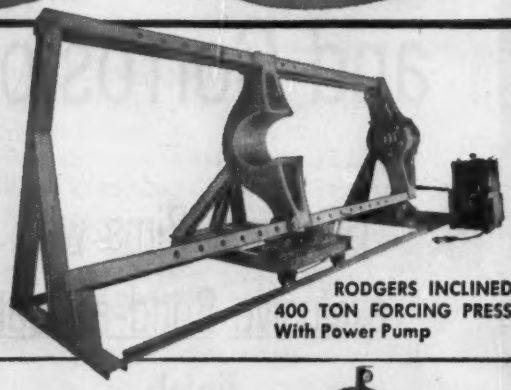
THE MOST FOR YOUR MONEY!...

Rodgers Forcing Presses

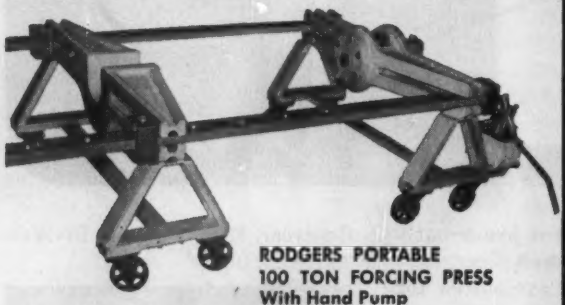
Greater Versatility **Rugged Power** **Flexible Controls**



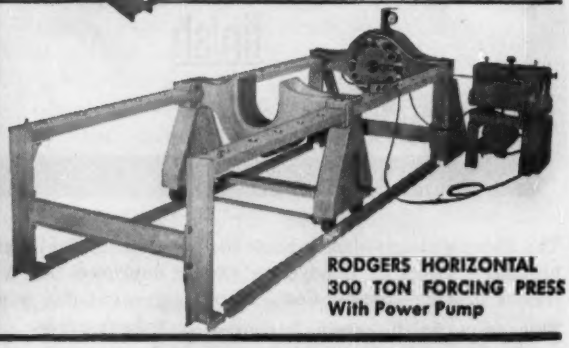
RODGERS VERTICAL
600 TON FORCING PRESS
With Adaptors and Hooks



RODGERS INCLINED
400 TON FORCING PRESS
With Power Pump



RODGERS PORTABLE
100 TON FORCING PRESS
With Hand Pump



RODGERS HORIZONTAL
300 TON FORCING PRESS
With Power Pump

When you buy a Rodgers Forcing Press, you are not tying up your money in a single purpose tool. Compared with other presses, Rodgers design permits a wider variety of jobs to be handled—from the full tonnage capacity of the press, on heavy duty work, to partial capacities required for light jobs.

Rodgers Press design also offers unique flexibility in the interchangeability of cylinders and power source. Each press can be easily modified to suit changing job requirements. And an "extra" feature is the simple way the cylinder and pump may be detached for jacking, pulling and pressing work in the shop or field. Rodgers positive, accurate controls may be used at the press or remote.

When you check Rodgers Forcing Presses, feature for feature, their rugged construction, fast, positive action, and the variety of adaptors, hooks and other accessories available, you will be convinced that a Rodgers will give you the *most* for your money.

Rodgers Forcing Presses are available in standard, horizontal, vertical, inclined and portable models... capacities from 100 to 600 tons... with power or hand pumps.

Write for Catalog No. 315A... it gives complete details and specifications.

HYDRAULICS Rodgers KEEP THE WORLD MOVING

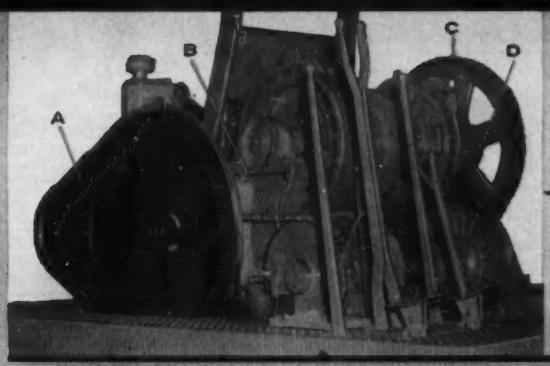
RODGERS HYDRAULIC, Inc.

Pioneers in High Pressure Hydraulics Since 1932

7403 Walker Street • Minneapolis 26, Minnesota

Circle 14 on Reader Service Card

NEW "QUICK-WAY" TRUCK-SHOVELS
get full-time pull power with DIAMOND roller chain!



New "QUICK-WAY" Truck-Shovels and Cranes from 15 to 25 tons capacity use multiple and single strand DIAMOND Roller Chain for maximum pulling and hoisting power and smooth, more reliable operation.

DIAMOND Roller Chain transmits power from engine to jackshaft (A), to swing-shaft (B); provides pull power for main hoist (C), boom hoist (D) and haul-back.

Your DIAMOND Distributor has all types and sizes of roller chains in stock for immediate delivery. See the Yellow Pages of your telephone directory under "Chains", or "Chains, Roller" or write the factory for Catalog and address of your nearest DIAMOND Distributor.

DIAMOND ROLLER CHAINS

DIAMOND CHAIN COMPANY, INC. | A SUBSIDIARY OF AMERICAN STEEL FOUNDRIES | DEPT. 418 • 402 KENTUCKY AVE., INDIANAPOLIS 7, IND.
Offices and Distributors in All Principal Cities

Circle 15 on Reader Service Card

. . . and for

NEARBY SERVICE on Black & Decker tools. Black & Decker maintains 50 factory service branches plus authorized service stations to give your B&D tools the attention mechanical products need periodically. Keep your B&D tools in top condition, on the job all the time.

Only factory parts and factory-approved methods are used. Fast service and reasonable cost, always.

SWIFTY SERVICE says be sure to ask about:

FREE TOOL INSPECTION no cost, no obligation.

STANDARD B&D GUARANTEE after completion of all recommended repair work.

You'll find the location of the nearest B&D repair facility in the Yellow Pages under "Tools-Electric," or write for address to: THE BLACK & DECKER MFG. CO., Dept. 2201-S, Towson 4, Md.

50th YEAR

See Tools-Electric -Yellow Pages- for Service & Sales

Black & Decker

Quality Tool Service

Circle 16 on Reader Service Card

Job Talk...

Studs Hold Timber Shoring

Threaded studs end-welded to the flanges of soldier beams held timber shoring for the foundation of the National Education Assn. building, Washington, D. C.

Local contractor Schnabel Foundation Co. worked out the scheme to eliminate driving timber sheeting into place behind the flanges of soldier beams. First the contractor drove soldiers around the perimeter of the lot and excavated the foundation to expose the piles. A crew with Nelson NS-9 welding guns then end-welded studs measuring 6 in. long and ½ in. in dia onto the flanges of the soldiers. Spacing of the studs was slightly greater than the width of timber sheeting.

To hold the timber shoring, a small steel plate with a predrilled hole in the center was slipped over each stud and secured with a washer and nut. Workmen held timbers in place against the face of the soldiers while others tightened the nuts to clamp the timbers. Cost of the hardware was only 30c per set.

Foam Plastic Floats Buoy a Pipeline

A pipeline specialist recently used billets of foam plastic to help place a 3,200-ft-long, 12½-in.-dia gas line across the Niagara River to Grand Island.

The H. L. Gentry Co. of Springbrook, N. Y., first dredged a 14-ft-wide trench to a depth of about 20 ft to hold the pipeline. The river ranged up to 20 ft deep, with a tricky two to four-knot current. The pipelines consisted

that has the GUTS to prove its maintenance costs peanuts!

Take an Impact Wrench that's built with extra ruggedness clear through. Take a Factory Service Branch network that keeps accurate repair records. Result: *proof positive* that Black & Decker Impact Wrenches have a phenomenally low maintenance cost.

No other Impact Wrench approaches the Black & Decker because no other Impact Wrench can match the power, speed and maintenance-free construction of a Black & Decker. From drive spindle to reversing ring, every part has been designed to eliminate breakdown problems.

Wherever a bolt, nut, wood or lag screw must be spun, or drilling and tapping done—in machinery moving, installation work, general maintenance or production—a B&D Impact Wrench will do the job faster, with less fatigue, and at lower cost. Mail the coupon or call your B&D distributor for a demonstration. *For Sales or Service, look in the Yellow Pages under* TOOLS ELECTRIC

Black & Decker®

CUTS MAN-HOURS TO MINUTES

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THE BLACK & DECKER MFG. CO., Dept. 2201
Towson 4, Md. (In Canada: Brockville, Ont.)

☐ Please arrange a demonstration of a B&D Impact Wrench.

☐ Please send additional information on.....

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

☐ Drills ☐ Hammers ☐ Screwguns ☐ Bench Grinders

DIESELS GO!

on winter's coldest days

ZERO START

DIESEL STARTING FLUID INJECTORS

PUSH-BUTTON STARTING

THERMOSTATIC CUTOFF

New for '61—the first and only push-button Diesel Starting Fluid Injector with *automatic cutoff*. Install this dependable, low-cost unit on all your Diesels. Eliminate cold-weather down-time—keep engines working a full shift.

A Zero Start Diesel Starting Fluid Injector can pay for itself in just one winter morning. Thermostatic cutoff prevents misuse.

See your equipment dealer now, or write

PHILLIPS
MANUFACTURING COMPANY
8200 Grand Avenue
Minneapolis 20, Minnesota

Circle 18 *on Reader Service Card*

JOB TALK . . .

continued

of six sections averaging 350 ft in length and weighing about 19 tons apiece.

Gentry's crew attached three 9-ft-long billets of Styrofoam plastic measuring 25x33-in. to each section of pipe to counterbalance its weight when immersed in water. Styrofoam has a buoyancy factor of 55 lb per cu ft.

Six International TD-18 crawler tractors with side booms fed the sections of pipe into the river. A Caterpillar D7 with a winch pulled them across the river from the opposite shore. Buoys made of small blocks of Styrofoam marked the location of each float. The floats were released by a skindiver when the job was completed. The skindiver, along with supervisory personnel, worked from aboard an old World War II duck.

gravel on a Georgia building project.

Contractor Newman Construction Co. of LaGrange, Ga., filled

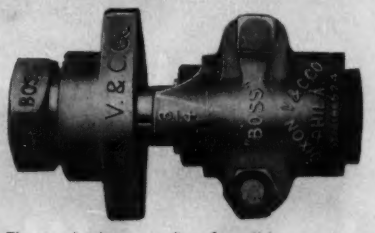
Front-End Loader

A job-built counterweight helps balance a front-end loader that charges batch plant hoppers with an old oil drum with concrete to make a counterweight for their Massey-Ferguson Model 50 loader. The contractor poured concrete around an iron bar running vertically through the drum and a horizontal bar with ends projecting from each side of the drum about 2 ft from its bottom. Steel bars mounted at the rear of the loader's frame connect to the ends of the embedded bars and hold the drum. The loader's hydraulic lift keeps the drum a few inches off the ground so that it does not drag or catch on obstructions.

Reliability THAT ASSURES Lower Drilling Costs!

"GJ-BOSS"

AIR HAMMER COUPLING



The washerless coupling for all heavy-duty air hose connections to hand drills, wagon drills, drifters, jumbos. Famous for strength, durability and efficiency. Quickly connected and disconnected, with no lost or worn-out washers to replace. Compact and Heavy Types.

"BOSS" Air Hammer Coupling—same as above except Washer Type.

For lighter services—"GJ-Dixon" and "Dixon" Air Hammer Couplings.

"BOSS" Self-Honing AIR VALVES

Used for the efficient control of air on compressors, manifolds, headers, sump pumps, etc. Strong, durable, compact. Self-adjusting, quick-opening, full flow. Male or female I.P.T.

Bronze plug automatically hones to perfect seal against harder metal of valve body.

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Circle 201 *on Reader Service Card*

How 4-in-1 Fleet Owners cash in on "MULTI-MACHINE" utility...

7-unit owner, Riemer Brothers, Inc., Schiller Park, Illinois, handle sizeable contracts over the midwest with International Drott 4-in-1's. Says President George Riemer: "Each dollar we have invested in 4-in-1's does the work of several dollars in 'big-ticket' machines to do all a 4-in-1 does—ably and profitably." Riemer Brothers save up to 90% on hand labor cost on fine grading work—with 4-in-1 "carry-type scraper" working accuracy!

8-unit owner, Lark Shrader, Los Gatos, California, credits much of his business success to 4-in-1's. "My competition uses ordinary limited purpose tractor loaders, while our International Drott 4-in-1's can do almost anything," states Mr. Shrader. "We charge more per hour, and have a customer waiting list." Here one of Mr. Shrader's TD-9 rigs shows exclusive 4-in-1 clam-action bottom-dumping, that eliminates the sticky materials problem!

5-unit owner, Zachary & Brown, Abilene, Texas, bank on International Drott 4-in-1 capacity and versatility for speeding construction of Atlas Missile silos. After "shooting" loose a 5-foot depth of rock, contractor lowers a TD-9 Four-in-One into the hole—to dig and load the material into a big dragline bucket. The circular holes are dug 56 feet in diameter, 180 feet deep. Contractor can "clam-handle" big rocks; bulldoze; grade; apply "power-shovel-like" break-out force—*only* with the 4-in-1's!

Who better than fleet owners would know what it means to command International Drott 4-in-1 "equipment fleet" performance. Compare for yourself the big advantages of getting the built-in utility of bulldozer, clamshell, excavator-loader, and "carry-type scraper"—in one machine, one-man-operated! Let your International Drott Distributor demonstrate!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

You own *FULL-POWER* ... with "*LIVE-TRACK*"

"Live-track" Planet Power-steering eliminates load-limiting "dead-track drag!" The TD-25 pushes or pulls the same king-size loads on turn or straightaway! On-the-go Hi-Lo power-shifting ends "gear-shift lag!" The "25" gives you instant, *up-or-down* matching of power to condition. *You turn with the dozer fully loaded, without spillage — do constant contact push-loading applying full power, getting full speed, without mauling the scraper!*

Only the "25" gives you the wallop of the International DT-817 engine — 230 turbocharged Diesel hp — to eliminate "slow-motion" lug-downs, even at high altitudes. For full performance under slam-bang conditions, the "25" has the super undercarriage strength of double-box-beam, precision-welded track frames!

No wonder owner after owner reports that 230-hp "25's" outwork king-sized clutch-steered crawlers, up to 50%! Prove to yourself what it means to own the capacity-boosting advantages of full-power momentum — full time, as *standard equipment!* Let your International Construction Equipment Distributor demonstrate the TD-25!

momentum FULL-TIME TD-25 performance!

Beat the benching capacity of clutch-steered crawlers 100-hp bigger! Simply shift the TD-25's bank-side track to high range—the outside track to low—for full-bite benching. No "bank-nosing"—no sluing—no "lever-fighting." The planet-drive "25" keeps itself "on course"!

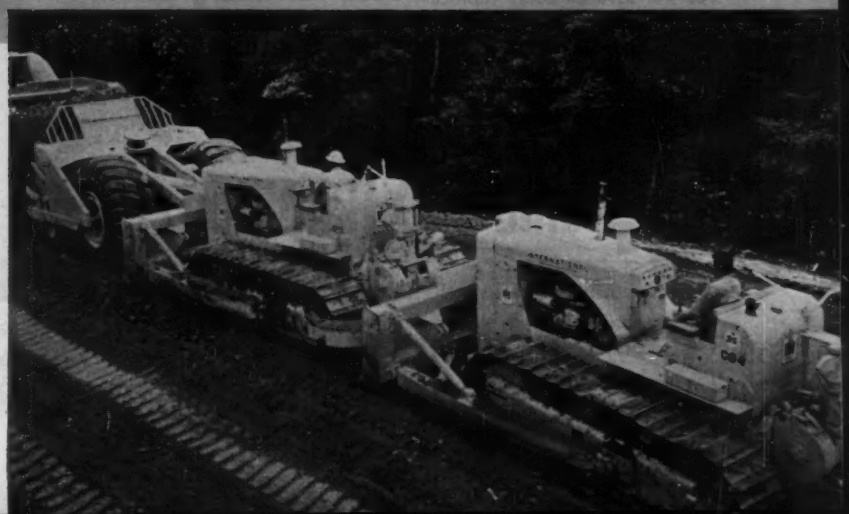
This TD-25 removes over 60% more overburden for a quarry man than his formerly-owned king-size clutch-steered crawler. Reasons: full-time "live-track" Planet Power-steering ends load-spilling "dead-track drag"—and the TD-25's high reverse of 7.5 mph cuts his dozer cycle time by more than 10%!

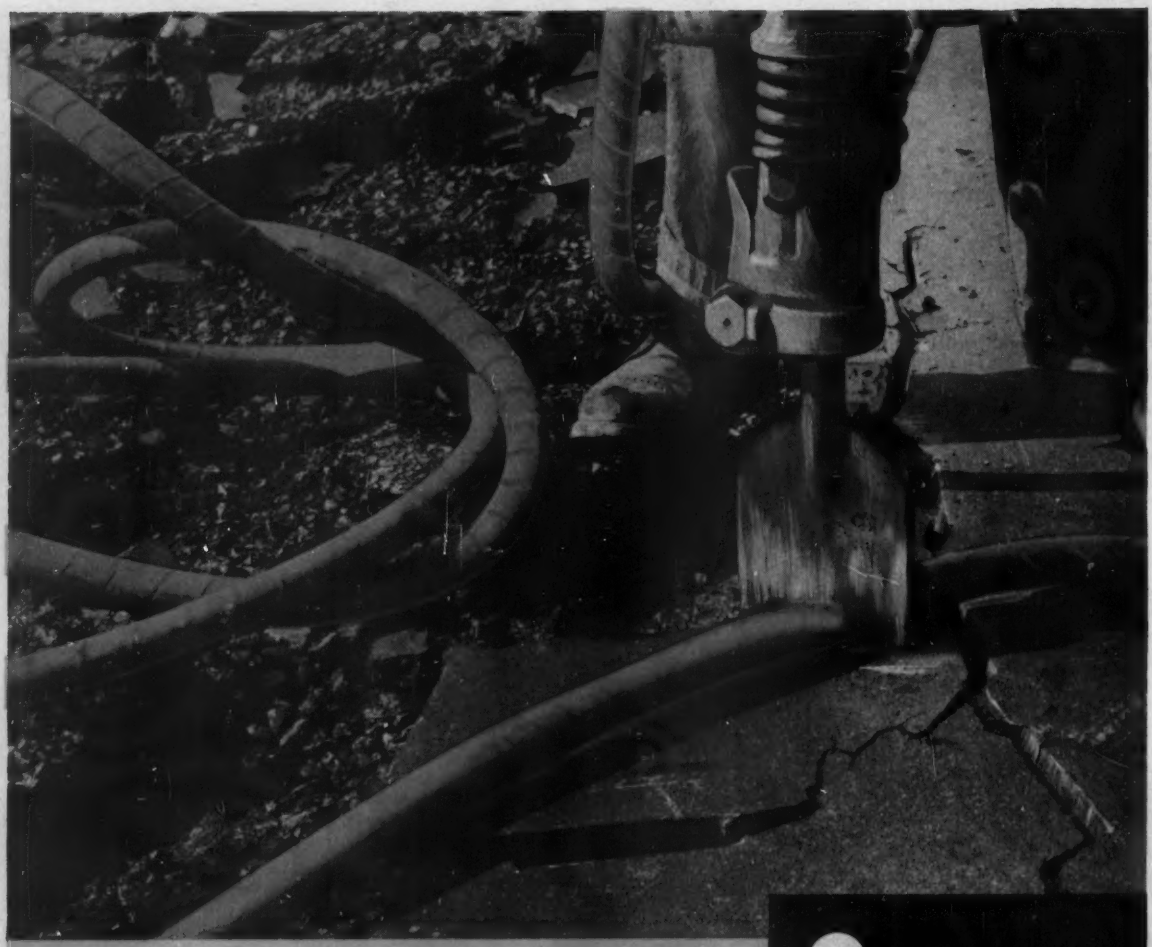
With on-the-go Hi-Lo power-shifting, you shift down to dig hard materials—shift up to "run" with the load. Hi-Lo power-shifting makes the TD-25 the industry's only 4-speed torque-converter crawler, and the only one with load-matching efficiency-range control. Only simplified TD-25 planetary design is engineered and located to give you "live-track" power-steering and on-the-go power-shifting!

International® Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

You speed up all four steps of the push-loading cycle with the torque-converter TD-25. (1) You power-shift down and use decelerator to get feather-touch contact; (2) power-shift either track up or down to keep solid push-block contact on curves; (3) power-shift up, on-the-go, for gear-higher kick-outs; (4) with 7.5 mph reverse, reposition faster than other rigs!





Pounded over 200 times by air hammer... still not cut!

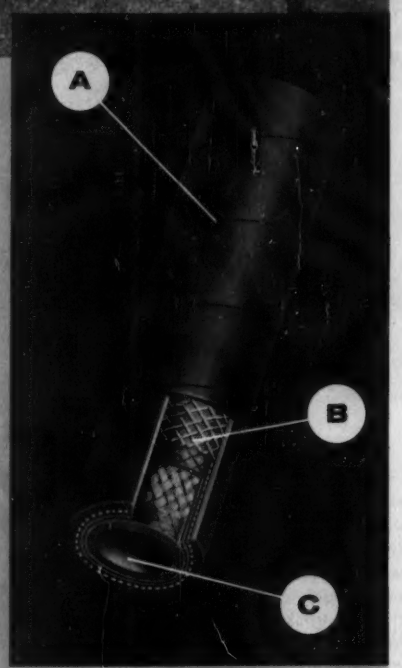
Even after steady pounding with an air hammer, which delivered 80 pounds of pressure to the chisel edge, Gold Bond air hose was still intact! Think of how much you will save on costly replacements should your operator accidentally hammer Gold Bond for a few seconds... or a trucker dumps a load of rock on it... or a tractor grinds over it.

A. COVER: Extremely tough, resilient rubber; resists abrasion, cutting and gouging.

B. CARCASS: Nylon and steel. Braided nylon cord over woven steel wire webbing resist cutting impacts.

C. TUBE: Won't soften or flake, resists oil.

Write Dept. E for more information.



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Serving Industry Since 1870

MANUFACTURING CORPORATION, TRENTON 3, N. J.

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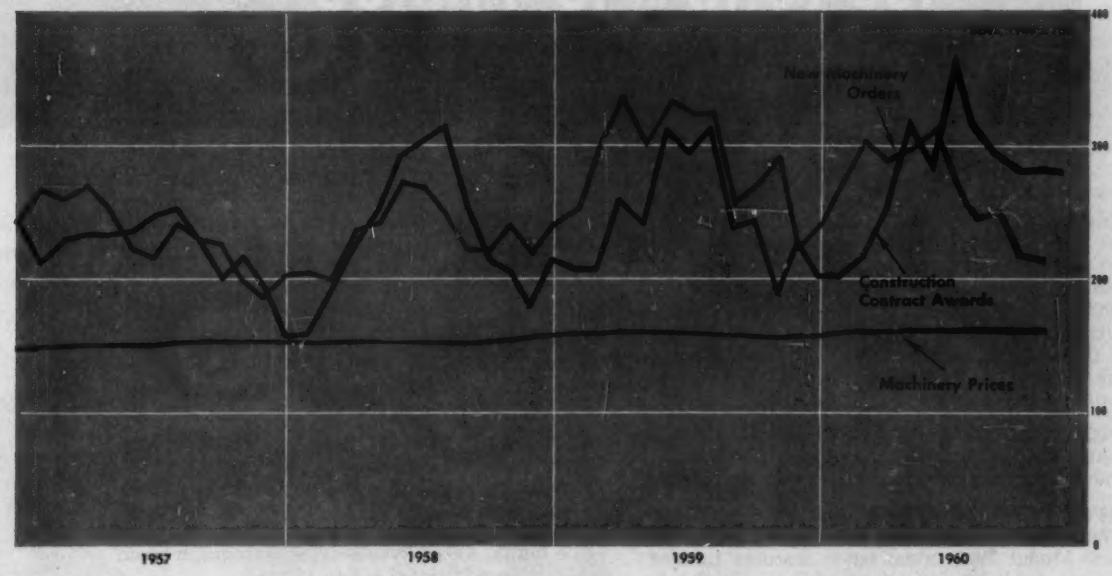
Trends in the Machinery Market . . .



Price Index

	NOV. 1960	MONTH AGO	YEAR AGO	% CHANGE 1959-1960
All Types of Equipment	177.3	176.7	172.9	+ 2.5
Cranes; Draglines, Shovels	174.1	173.6	170.5	+ 2.1
Shovel, ½ cu yd	169.3	167.9	165.0	+ 2.6
Shovel, ¾ cu yd	175.4	175.4	173.9	+ 0.9
Shovel, 1-1½ cu yd	189.3	189.3	184.3	+ 2.7
Shovel, 2-2½ cu yd	172.4	170.3	164.7	+ 4.7
Shovel, 3-3½ cu yd	167.8	167.8	167.8	0
Shovel, 6 cu yd	197.9	197.9	195.0	+ 1.5
Crane, truck mounted	168.2	168 2	166.2	+ 1.2
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	157.5	+ 3.4
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	186.6	186.6	185.8	+ 0.5
Scraper, 4 wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 wheel, 12-15 cu yd	156.8	156.8	156.8	0
Scraper, 2 wheel, 15-19.5 cu yd (a)	126.2	126.2	124.9	+ 1.0
Grader, heavy duty	174.1	174.1	172.6	+ 0.9
Grader, light & medium	170.9	170.9	171.1	— 0.2
Tractors (non-farm, incl industrial)	195.3	194.1	188.7	+ 3.5
Wheel type, off-highway (a)	129.2	129.2	129.0	+ 1.5
Crawler type, 50-74 dhp	205.3	203.5	193.6	+ 3.5
75-99 dhp	204.3	204.3	197.2	+ 3.6
100-154 dhp	199.2	199.2	192.4	+ 3.5
155-200 dhp	208.6	205.4	201.3	+ 3.6
Machinery, Tractor Mounted	176.7	176.2	169.0	+ 4.6
Dozer, cable controlled	164.8	164.8	154.4	+ 6.7
Dozer, hydraulic controlled	201.9	201.9	186.6	+ 8.2
Cable power control unit	152.9	152.9	151.4	+ 0.9
Loader, tractor shovel	164.6	163.2	162.5	+ 1.3
Specialized Machinery	158.8	158.8	156.2	+ 1.7
Ditcher	153.8	153.8	150.7	+ 2.5
Roller, tandem	226.4	226.4	220.2	+ 2.8
Roller, 3 wheel	178.7	178.7	174.9	+ 2.2
Ripper and rooter	164.5	164.5	150.5	+ 9.3
Dewatering pump, 10 M gph	111.5	111.5	110.3	+ 1.1
Dewatering pump, 90 M gph	151.5	151.5	151.0	+ 0.3
Portable Air Compressors	167.5	167.5	167.5	0
Contractor's Air Tools	181.6	181.6	181.6	0
Mixers, Pavers, Spreaders	158.0	158.0*	157.5	+ 0.3
Mixer, portable, 11 cu ft	166.6	166.6*	165.9	+ 0.4
Mixer, portable, 16 cu ft	172.7	172.7	172.2	+ 0.3
Mixer, truck, 6 cu yd	135.1	135.1	132.4	+ 2.0
Mixer, paving, 34 cu ft	196.7	196.7	193.5	+ 1.6
Concrete finisher & spreader	173.5	173.5*	196.7	—11.8
Bituminous distributor	126.2	126.2	122.3	+ 3.1
Bituminous spreader	179.4	179.4	170.2	+ 5.4
Bituminous paver	165.6	165.6	163.2	+ 1.5
Off-Highway Trucks, Wagons (b)	102.5	102.5	101.1	+ 1.3
Contractors off-highway truck (b)	102.0	102.0	101.1	+ 0.9
Trailer dump wagon (b)	106.7	106.7	101.4	+ 5.2

• (a) January, 1955 = 100 • (b) January, 1958 = 100 * Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

Equipment Makers See Steady Prices in First Quarter

LIST PRICES of new construction equipment should hold steady between now and April 1. A number of leading equipment makers say they plan no significant price changes.

One exception was a power shovel manufacturer who says that he plans to increase prices 3% to 4% during the first 6 mo of this year. Another shovel manufacturer says the outlook for his price list is uncertain but that there probably will be no changes.

Three leading makers of tractors, scrapers and other earthmoving and excavating equipment say they plan no price changes between now and April 1. A fourth company says that "prices will be increased on a few models for engineering improvements. However, no general price increase is contemplated." Price changes on off-highway rear dump trucks are "definitely out" between now and April 1, says one leading manufacturer who is coming out in June with a new line of off-highway trucks.

List prices of construction equipment, fob plant, moved up slightly between Oct. 15 and Nov. 15, according to the US Bureau of Labor Statistics price index. The November index of 177.3, based on 1947-49 as 100, was only 0.3% above the revised October value. But it's the highest on record.

The few notable changes in price indexes included some increases in tractor prices. These raised the BLS sub-indexes 1.6% for models in the 155-drawbar-hp-and-up class, 0.9% for those of 50-74 hp and 2.9% for those under 49 hp. Tractor-loader prices averaged 0.9% higher and increases in shovel prices raised the indexes 1.2% in the 2½-yd bucket class and 0.8% in the ½-yd size. By contrast, an October price cut trimmed the index for concrete finishers and spreaders by 14%.

100 TONS at 15′ RADIUS

makes the BEST *crane even* BETTER!

Now, with the new Manitowoc Model 3900, you get a *full 100-TON* lifting capacity at a practical *FIFTEEN FOOT RADIUS* with plenty of reserve power and stability. This means the 3900, already recognized in the field as the TOP lifting crane in its class, will lift 33% *more* than it did before. Check these new advances and see why a Model 3900 crane can make *more money* for you.

INCREASED LOAD CAPACITY AT GREATER RADIUS — With a 60-ft. boom, the 100-ton maximum load can be lifted at a radius of 15 feet.

NEW "INVERTED ANGLE" BOOM IS LIGHTER, STRONGER — Made of a special new alloy, the new Model 3900 crane boom features tubular lacings welded to *inner faces* of the main chords for greater strength and longer life. Boom weight is reduced, yet strength and rigidity are increased. You can use longer booms — up to 170′ — with higher capacities. Long reach tubular booms are also available.

SIMPLE BOOM INSERT CONNECTIONS with a single bolt at each joint permit fast in-the-field addition or removal of extra boom sections.

NEW 3-PIECE SELF-REMOVABLE COUNTERWEIGHT provides proper balance and ample stability. Carbody and rotating bed are matched to the demands of increased counterweighting and bigger work loads. As before, the counterweight is removed by the machine itself without the use of jacks, blocking or other cranes.

NEW "DYNAMIC LOAD CONTROL" DEVICE provides power lowering of full 100-ton load at lowering speeds comparable to hoisting speeds. The unit consists of a hydraulic retarder with heat exchanger, and a reversing mechanism with clutch and air controls. A chain drive interlocks main drum with the reversing mechanism which is located on the main drive shaft. The retarder, *not the engine,* absorbs load energy. Line speeds are controlled over a continuous range.

NEWLY ENGINEERED RETRACTABLE HIGH GANTRY reduces overhead clearance to a minimum when traveling. Gantry is quickly and easily raised or lowered by the boom hoist . . . no outside help is required.

NEW OUTSIDE POSITIONING OF CRAWLER DRIVE CHAIN permits crawler units to be removed for job-to-job transport without "breaking" drive chain or crawler pads. (Optional)

AUTOMATIC CLUTCH THROW-OUT LIMIT STOP for safe, close radius booming. This device *automatically* disengages boom hoist clutch when boom approaches a pre-set contact point . . . prevents operator from raising boom beyond safe limits. Also, physical-type pantograph boom stop is an additional safety feature.

INDEPENDENT BOOM HOIST IS STANDARD — has air controls to give the operator greater precision in handling boom and load. Operator has positive control at all times. Available on air-equipped machines only.

WIDE RANGE OF CONTROLS gives operating versatility. Available with air controls *only,* or manual controls *only,* or as a combination machine with *both* air and manual controls.

INDEPENDENT SWING is available as a useful feature for placing steel and "tight quarter" maneuvering. Allows operator to boom, swing, and travel simultaneously.

COMPACT DIMENSIONS for easier between-job shipment. The crane can be carried on standard railroad flat cars, within ordinary rail clearances . . . removing only crawler units, boom, and back hitch.

These new and improved features are only a small part of the complete 100-Ton Model 3900 crane story. To learn about the many other advantages you can enjoy, including full convertibility to dragline or clamshell, visit your nearby Manitowoc distributor soon.

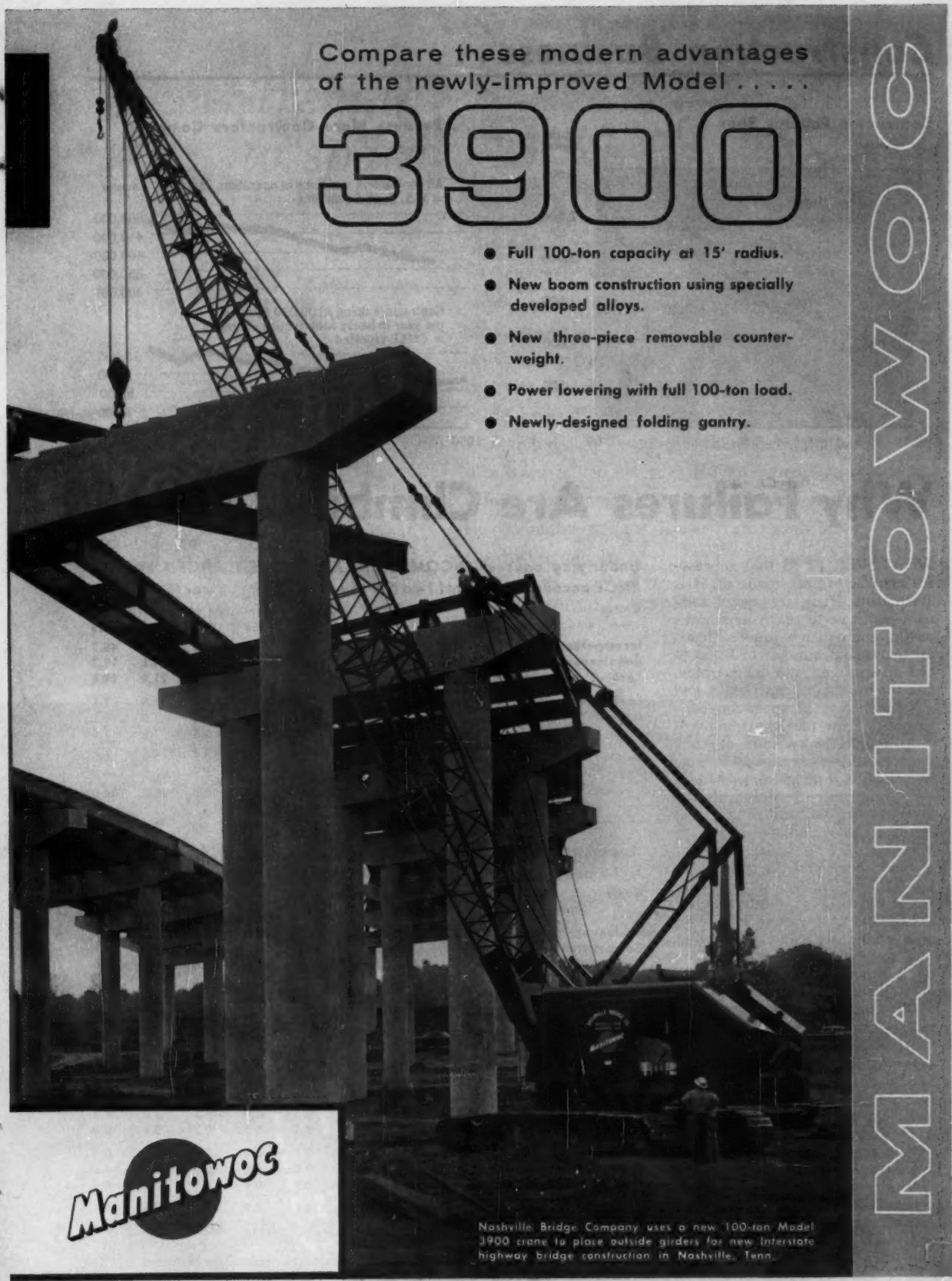
MANITOWOC ENGINEERING CORP. 1 K
Manitowoc, Wisconsin Dept.. CM
Gentlemen: I'd like more information on your new 100-Ton Model 3900 crane.

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
Manitowoc, Wisconsin

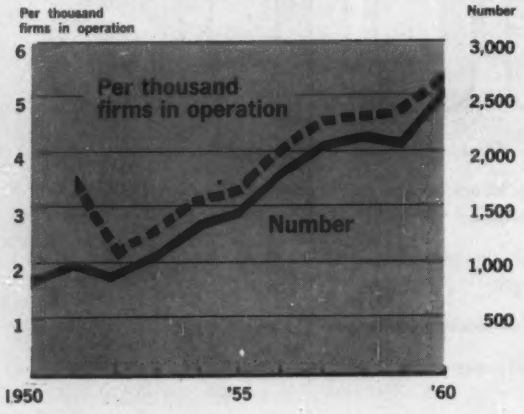
CRANES
25 to 125 TONS

SHOVELS
1¼ to 6 YDS.

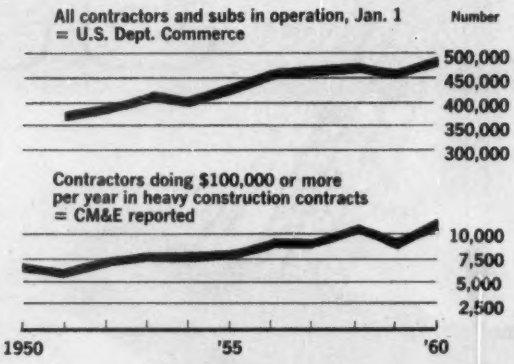

Compare these modern advantages
of the newly-improved Model . . . . .
3900
● Full 100-ton capacity at 15' radius.
● New boom construction using specially developed alloys.
● New three-piece removable counterweight.
● Power lowering with full 100-ton load.
● Newly-designed folding gantry.
MANITOWOC
Manitowoc
Nashville Bridge Company uses a new 100-ton Model 3900 crane to place outside girders for new Interstate highway bridge construction in Nashville, Tenn.

Circle 25 on Reader Service Card

Contractor Failures Soar . . .



. . . Because More Contractors Compete



Why Failures Are Climbing

WHATEVER IT IS that successful contractors are made of, it is stern stuff. True, contractor failures continue to reach new highs as the competitive squeeze leads an increasing number of firms to bid themselves into bankruptcy. But the number of contractors and subcontractors in operation continues to grow (see chart, above).

Although the number of contractor failures increased by leaps and bounds during the past decade, bankruptcies represented a very low proportion of the total count of contractors and subs in operation.

Last year's failure total was the highest since Dun & Bradstreet began keeping tabs on contractor bankruptcies in 1934. Yet, only about five contractors went bust for every 1,000 estimated to be in operation at the beginning of the year (see chart, above).

But the 24% jump in contractor and subcontractor failures in the first 11 mo of 1960 is nothing to slough off: It represents a 26-yr high of more than 2,500 failures for the year, and points up the need for contractors to become more aware of the reasons why business can go sour. Dun & Bradstreet's analysis of past failures groups the reasons into two categories: the basic "underlying cause"; and the "apparent cause (or causes)" that results from an "underlying" shortcoming.

continued on page 30

Underlying causes: INCOMPETENCE and UNBALANCED EXPERIENCE account for almost two out of every three contractor failures

Cause	Involved in this percentage of total failures				
	1959	1958	1957	1956	1955
Incompetence	41.7	40.8	38.9	36.7	45.7
Unbalanced experience*	23.7	22.8	24.2	24.1	19.7
Lack of managerial experience	18.1	19.8	21.6	21.9	19.0
Lack of experience in line of work	8.4	8.4	9.5	9.5	7.1
Neglect	2.8	3.7	2.5	3.7	5.3
Fraud	1.6	1.9	0.9	1.9	1.4
Disaster	0.5	0.5	0.5	0.6	1.0
Reason unknown	3.2	2.1	1.9	1.6	0.8
	100.0	100.0	100.0	100.0	100.0

Apparent causes: INADEQUATE SALES and COMPETITIVE WEAKNESS are involved in over 70% of contractor failures

Cause	Involved in this percentage† of total failures				
	1959	1958	1957	1956	1955
Inadequate sales	39.6	38.5	35.0	34.2	30.7
Competitive weakness	30.7	28.8	28.6	28.4	26.1
Receivables difficulties	14.9	17.6	17.5	14.5	16.0
Heavy operating expenses	8.3	9.1	13.4	13.1	17.7
Excessive fixed assets	3.9	5.4	4.4	4.6	6.6
Inventory difficulties	1.7	2.0	2.6	1.9	1.4
Poor health	1.6	2.0	1.3	2.3	2.4
Irregular disposal of assets	1.1	1.2	0.6	1.2	0.8
Bad habits	0.8	1.1	0.6	0.7	1.8
Poor location	0.5	0.3	0.5	0.5	0.4
False financial statement	0.3	0.5	0.1	0.2	0.3
Marital difficulties	0.3	0.4	0.3	0.6	0.6
Strike	0.1	0.1	0.1	0.2	0.4
Fire	0.0	0.0	0.0	0.1	0.1
Flood	0.1	0.1	0.0	0.0	0.0
Employees' fraud	0.1	0.1	0.1	0.1	0.1
Total Number of Contractor Failures	2,064	2,162	2,105	1,834	1,404

Dun & Bradstreet data and analysis

*Management's experience not well rounded in sales, finance, purchasing and production.

†Per cents add to more than 100% because more than one factor was included in some cases.

Circle 27 on Reader Service Card ➤

Strength to spare

In motor graders strength is important. Strength to withstand the shock and strain encountered in the heaviest grading jobs. In Huber-Warco graders the backbone of strength is the frame ... it assures dependability for any job. Like those on the 8, 9, 10 and 11-D series, this all-welded, low-stress, single-member steel frame has reserve strength built in. Of full box-section design, its two steel channels are boxed together with heavy steel plates top and bottom. These two channels, which separate just behind the saddle, are further reinforced on the inside with heavy steel plates assuring strength to spare for even the most strenuous jobs. What's more, you get better visibility plus extra clearance for blade maneuverability due to Huber-Warco's high-arch design. Investigate these and the other plus features you get with Huber-Warco equipment— motor graders, 3-wheel and tandem rollers, maintainers. Your Huber-Warco distributor has all the details.

HUBER-WARCO COMPANY • MARION, OHIO, U.S.A.

HUBER W WARCO

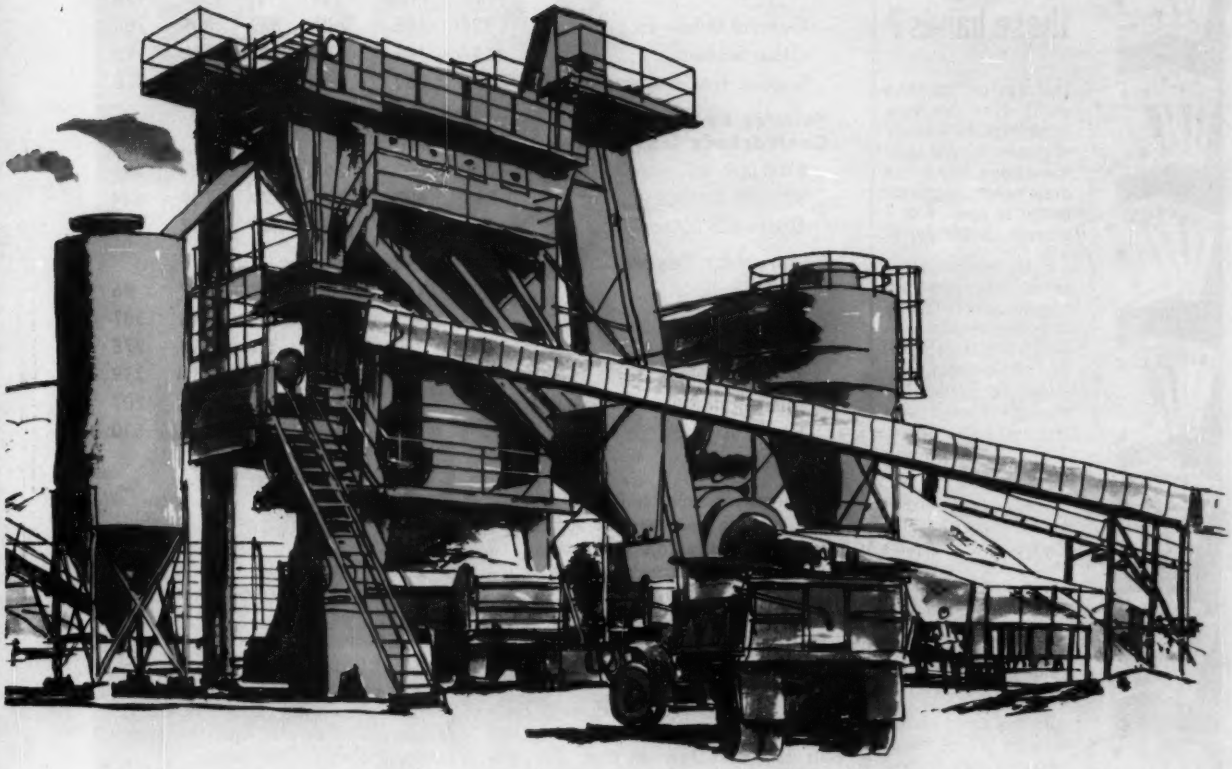
THE USEFULNESS OF A LIMA MADSEN

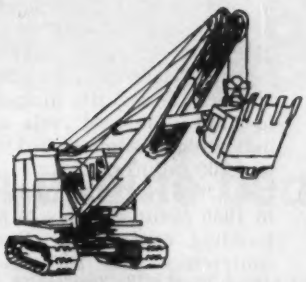
GET UP TO 350 TPH WITH LOWER OPERATING COSTS PLUS CLEANEST OPERATION

Lima Madsen Asphalt Plants are big tonnage producers. They've proved this over and over again—even on the most exacting mix specifications. Built in batch capacities from 1000 to 10,000 lb. . . . there's a size and model—portable and stationary—to meet every asphalt mixing need.

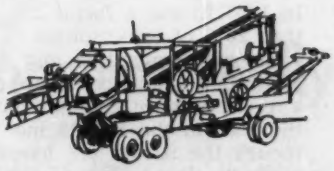
Lima Madsen Asphalt Plants give you many money-making advantages. Better materials and superior workmanship reduce maintenance, add years of profit-making production. Better engineering increases accessibility for normal servicing. The Madsen Twin-Shaft Pug Mill Mixer combined with the Madsen Asphalt Pressure Injection System (Pat.) gives the operator of a Lima Madsen Plant the means of getting the fastest and most thorough mixing action in the industry. Fast, precision timing and weighing, a smooth cycle of operation with no bottlenecks and easier operating with less operator fatigue . . . these are some of the advantages you get with a Lima Madsen Asphalt Plant. See your distributor for the complete story or write us for free literature.

6103

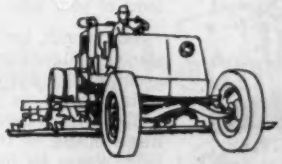




LIMA SHOVELS to 8 yd.; interchangeable as cranes to 140 tons on crawlers, 80 tons on rubber—draglines variable.



LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment. Simplified design, easy maintenance.



LIMA MODEL D ROADPACKER —Fast, deep vibratory compaction for single-course construction; available in Super model.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA MADSEN

Asphalt Paving Plants and Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION · LIMA, OHIO

Circle 29 on Reader Service Card

POKER?
Play to win!

How would you play these hands?

In coming months we'll discuss how most "experts" (steady winners) would play the above hands in draw poker, jacks or better to open, 6 or 7 players in the game.

Every hand involves some basic principle of good poker playing. Simple rules, but ones which are most often violated by most good losers. Of course, following the rules is no guarantee you'll win. But, you should win more often.

Ford is not recommending that you gamble. But if you do play poker for money, chalk or marbles... or for that matter, just for the fun of it, you'll probably enjoy the game even more when winning.

In the same series, we'll be telling you of another way to win with Ford, and with no gamble at all: simply by using Ford tractors and equipment to help solve the problems of your job.

Next month, for instance, we'll announce a cash-money offer which so far as we know has never before been made in this field. Watch for it. It could be worth more to you... well, maybe more... than a royal flush!

Tractor and Implement Div., Ford Motor Company, Birmingham, Michigan

Ford
TRACTORS
EQUIPMENT

Circle 30 on Reader Service Card

Contractor Failures: Who? Where?

Failures By Type of Contractor—

	11 Months		12 Months			
	1960	1959	1959	1958	1957	1956
General Building	924	686	749	872	805	708
Other General	147	146	156	121	125	96
Special trade subcontractors	1,291	1,069	1,159	1,169	1,175	1,030
Failures By Size of— Contractor's Liabilities—						
$100,000 or more	399	232	261	259	234	231
$25,000-$99,999	883	692	739	774	739	644
Under $25,000	1,080	977	1,064	1,129	1,132	959
Failures By Region—						
New England	99	121	131	140	119	96
Middle Atlantic	458	415	448	556	445	387
South	398	267	295	326	314	275
Middle West	574	432	474	433	419	339
Mississippi River to Rockies	288	207	227	222	285	207
Far West	545	459	489	485	523	530

Incompetence led the list of underlying causes and accounted for an increasing percentage of contractor failures over the 1957-59 period. In 1959, it caused 42% of contractor bankruptcies. Incompetence, however, isn't as common now as in 1955 or in many prior years.

Other underlying causes of failure have taken an increasing toll in the last few years. For example, "unbalanced experience" —lack of well-rounded experience in sales, finance, purchasing and production — figured in almost 24% of contractor failures in 1959. In 1955 it was a factor in less than 20% of bankruptcies.

Rugged competition and dangerously low bidding have forced a record number of contractors to the wall in the last 12 mo. Although the figures are based on 1959, the trend almost certainly will apply to 1960 as well. Inadequate sales or "competitive weakness" was the bugaboo of eight out of every 10 contractors who went bankrupt in 1959.

Of decreasing importance were investment in equipment, materials inventories, and collections. These three factors, represented in the table by "excessive fixed assets," "heavy operating expenses" and "receivables difficulties," apparently caused almost 27% of the failures. In 1955, they figured in roughly 40% of contractor failures.

The 1960 pattern of contractor failures (see table) points up these facts:

- General building contractor bankruptcies climbed the most.
- Sharpest rise (72%) was for contractors with $100,000 or more in total liabilities.
- Failures were down in New England and up in all other regions. The South had the worst record with a 49% jump.

Most of the 2,362 contractor bankruptcies recorded by Dun & Bradstreet in the first 11 mo of last year were special trades contractors. Mortalities jumped 21% to 1,291 subs (see table above), indicating a 12-mo record of close to 1,400 failures.

But the really sharp increases in 1960 failures points to general building contractors. Bankrupt contractors in this category climbed 35% to 924 in 11 mo.

Little rise was noted in failures among "other" contractors (those handling other - than - building construction). In fact, this group did much better in 1960 than in 1959 in keeping in the black—at least until November when increased failures lifted the year's cumulative total ahead of 1959 for the first time.

Failures are rising faster among larger contractors. Bankrupt firms with $100,000 or more in liabilities jumped 72% last year, but only 11% for those with less than $25.000.

Better products, *faster,* from your Federal-Mogul jobber:

Fm engine bearings can really take a beating

Ask the mechanics who keep heavy equipment on the job 'round the clock. Big rugged construction equipment calls for plenty of power at all times. That requires engines that can deliver full horsepower . . . bearings that can stand up under peak loads. And that's why Federal-Mogul engine bearings are "heavy-duty" built for this kind of job. It's why Fm bearings extend overhaul intervals.

When you overhaul with Federal-Mogul engine bearings, the job moves faster. An unlimited supply is always nearby. Precision inserts insure correct oil clearances automatically—make them easier to install. Call your Federal-Mogul jobber. He is always ready with full stocks.

FEDERAL-MOGUL ENGINE BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN

Circle 31 on Reader Service Card

Ease the profit squeeze

with a PAYLOADER®

Owners tell how these versatile tractor-shovels help cut operating costs on varied applications . . .

Aggregate — "After 6 months experience, our entire operation centers around the 'PAYLOADER' which has proven to be the best money-making machine we ever used. First, it retired the two power shovels that loaded haul trucks . . . then, we discovered it could handle dozing for us better than the tractor dozer did, and still have time for its usual truck loading."

Excavating — "We have tested and worked alongside other loaders and the Hough beats them all for slicing up hard-packed paving, blacktop and concrete . . . we never liked any machine so much."

Sewers — "The H-70 'PAYLOADER' with Drott 4-in-1 bucket is the best piece of equipment we ever purchased. It will move more dirt than any two competitive loaders that we have owned."

Batch Plant — "We're really proud of the new H-90 'PAYLOADER'. It handles the plant easier, has more power and moves around faster."

Brick Plant — "This 4-wheel drive 'PAYLOADER' has paid-off in many ways . . . it replaced a large, crawler type front end loader with an immediate reduction in operating costs."

Key Machine — There's no limit to the cost-cutting usefulness of a dependable "PAYLOADER" in new construction, maintenance and repair work. We suggest that you talk "PAYLOADER" with your Hough Distributor nearby. The mobility and work-versatility of these units *save time* and *protect* your profits on any job.

PROVEN 'PAYLOADER' MODELS available in 20 models, up to 12,000-lb. operating capacity, for every material handling need . . . backed by more than 20 years experience in the design and manufacture of rubber-tired tractor-shovels.

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THE FRANK G. HOUGH CO. LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
706 Sunnyside Ave.,
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Send Bulletin No. 424 on the complete PAYLOADER line.

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Title
Company
Street
City State

Circle 32 on Reader Service Card

SOME BIG CONTRACT AWARDS OF THE MONTH

George A. Fuller Co., Del E. Webb Construction Co., both of Los Angeles, Calif., and **Paul Hardeman, Inc.,** Stanton, Calif. A joint venture to construct Titan missile launching facilities at McConnell Air Force Base in Wichita, Kan. Corps of Engineers, 1800 Federal Office Bldg., Kansas City, Mo. $30,766,492.

J. A. Jones Construction Co., D. W. Winkelman Co., Inc., Nello-Teer Co., all of Charlotte, N.C. A joint venture to construct Titan II missile launching facilities at Davis-Monthan Air Force Base in Tuscon, Ariz. Corps of Engineers, Ballistic Missile Construction Office, 9610 Bellanca Ave., Los Angeles, Calif. $27,770,000.

Roland S. Catarinella, Monroeville, Pa. Erect the East Hills housing development including two-story town houses and apartment houses in Wilkinsburg, Pa., Action Housing, Inc., 1 Gateway Center, Pittsburgh. $20,000,000.

George A. Fuller Co., and **Turner Construction Co.,** both of Chicago, Ill. Construct a shopping center in Prospect, Ill. Randhurst Shopping Center, Mt. Prospect, Ill. $18,000,000.

J. A. Jones Construction Co., Charlotte, N.C. and **Brown & Root, Inc.,** Houston, Tex. Construct powerhouse substructure and intake structure for the Big Bend Dam and Reservoir on the Missouri River. Corp of Engineers, 1709 Jackson St., Omaha, Neb. $17,461,900.

R. M. Shoemaker Co., Philadelphia, Pa. Construct a 776 unit apartment building in Philadelphia. 2401 Pennsylvania Ave. Corp., Market St. National Bank Bldg., Phila. $16,000,000.

Twaits-Wittenberg Co., Los Angeles, Calif. Construct an eight-story headquarters building and associated research and engineering structures. Space Technology Laboratories, Inc., 5740 Arbor Vitae St., Los Angeles. $15,000,000.

Dravo Corp., Pittsburgh, Pa. Construct locks at the Maxwell Locks and Dam on the Monongahela River. Corps of Engineers, Pittsburgh. $14,938,579.

Photograph by Ernest L. Libby, Staff Photographer, Marine Studios, Marineland, Fla.

Underwater Treasure Found

NEW SUBMERSIBLE dewatering PUMP by GORMAN-RUPP

Model	Size	Capacity	Height	Motor	RPM	Weight
3VS1	3″ Disch.	300 GPM at 10′ Head	28″	5 HP 60 Cycle	3450	95 lbs.

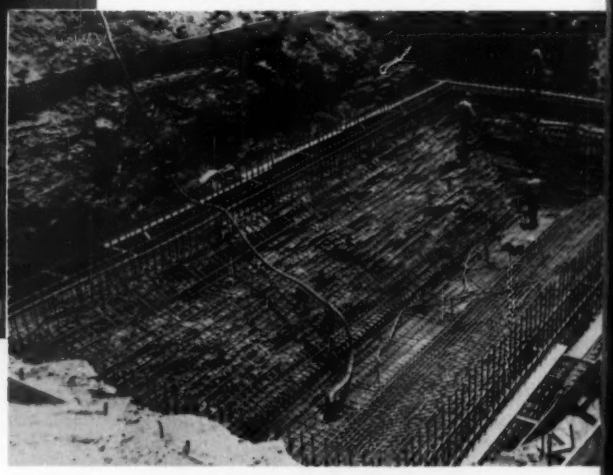
Single Phase, 230V; 3 Phase, 220V; 3 Phase, 440V

It's an All-American achievement—in engineering and production. In step with today's construction progress. Ready for tomorrow's needs. Available *now*. ● See it on the job and with more details on the next page.

TURN THE PAGE

Working around the clock in midwinter, bridge contractor used Model 3VS1-E5 Submersible Pump to dewater cofferdam.

Below: the new Submersible on a sanitary facility installation. Working against a static head of 40 feet, and with 150 feet of 3" discharge hose, the excavation was kept dry and work progressed.



THE NEW GORMAN-RUPP

SUBMERSIBLE dewatering PUMP

IS AVAILABLE NOW . . . at your authorized Gorman-Rupp Construction Equipment Dealer

TESTED and PROVED

a real "All-American" performance

In all seasons and in a variety of conditions, on bridge work, in the mine waters of New Mexico, on sanitary facility installations in Ohio and California, the Gorman-Rupp Submersible has passed most severe pumping tests with flying colors.

The new Submersible's capacity range, from 300 *gpm* at 10 feet *tdh* to 10 *gpm* at 120 feet *tdh*, is comparable to other makes using larger motors.

Submersible pumps are the modern answer to construction problems. All the advantages of electric power, and simple to install and use.

Model 3VS1-E5 is more compact, lighter-in-weight, pumps more with less attention, has longer life, fewer parts, is more easily serviced, and costs less than other makes.

See your local Gorman-Rupp dealer. He will be pleased to show this All-American favorite. It is the one Submersible pump available that is in step with America's progress in construction equipment design and performance.

☆ ☆ ☆

YOU ARE INVITED to receive an 8-page, full color catalog presentation on the Gorman-Rupp Submersible Dewatering Pump. Send a post card with name and address.

THE GORMAN-RUPP COMPANY

305 BOWMAN STREET • MANSFIELD, OHIO

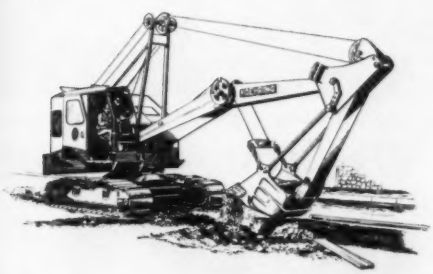
GORMAN-RUPP OF CANADA, Ltd. • ST. THOMAS, ONT.

ask the man in the cab

Shovel, crane, hoe or SKOOPER . . . crawler, SPRAWLER, truck or Cruiser . . . talk to the man who has pumped the pedals and handled a Koehring under load.

Talk operation. Talk maintenance. Talk capacity to get the job done. Words will vary but the story won't. Koehring makes a heavy-duty machine—heavy duty through and through. Business end, main machinery and mounting have what it takes to stand the toughest going, do a better job. And dollar for dollar a Koehring costs less to work and keep in business.

Ask the man in the cab . . . then you'll want to talk to your Koehring distributor for full details on how a Koehring can help you make your jobs more profitable. Do it soon.



KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

K103

◀ *Circle 34 on Reader Service Card*

Circle 35 on Reader Service Card

Job site. Today, it's being excavated and graded. Tomorrow, it will sprout office buildings, apartments and a shopping center.

Washington contractor simplifies purchasing,

GULF MAKES THINGS

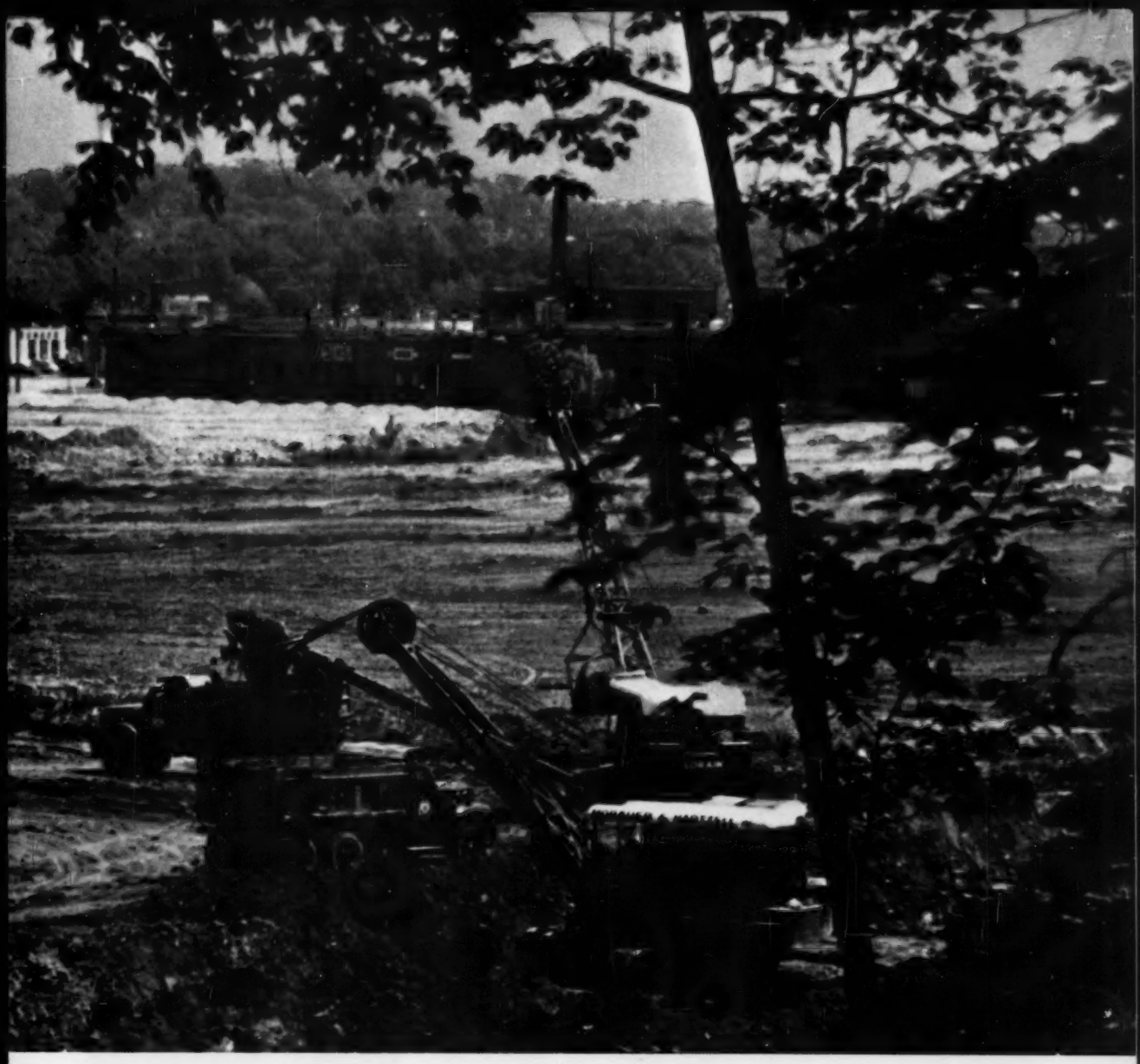
Morauer & Hartzell, Inc., does a lot of excavation work in the metropolitan area of Washington, D.C. Much of it is tough work involving stubborn old building foundations. Many of the job sites, like the one above, are confined by built-up areas.

G. M. Waldrep, Shop Superintendent noted, "We don't have much room to maneuver on this kind of job. Confined working area, plus the fact that we have several similar jobs going on at the same time, means our preventive maintenance program must stress simplified lubrication and mobility of lubricating equipment."

To get mobility, Morauer & Hartzell outfitted two lube trucks identically. These shuttle between jobs keeping the effective lubrication program right on schedule. And, it does away with the need to stockpile oils and greases at every job site.

Working with a Gulf sales engineer, Morauer & Hartzell set up a simplified lubrication program using multi-purpose Gulf products. Two oils have provided a broad safety factor for all of their equipment: Gulf Super-Duty Motor Oil for high output earth movers and Gulf Dieselube for other equipment. Gulflex® A has been used for all grease-lubricated applications and Gulf Multi-Purpose Lubricant 90 for transmissions, rear axles and other enclosed gear drives. Finally, for fuel needs, Morauer & Hartzell has used Gulf diesel fuel and Good Gulf® Gasoline.

Summing up, Mr. Waldrep said, "With this standard-



saves time and money with Gulf® products...

RUN BETTER!

ized program we have eliminated stockpiles at every job site. We have simplified purchasing. We have saved time."

Gulf's engineering service and quality products can save you time and money on your next project. May we have the opportunity to prove it to you? Call your nearest Gulf Office.

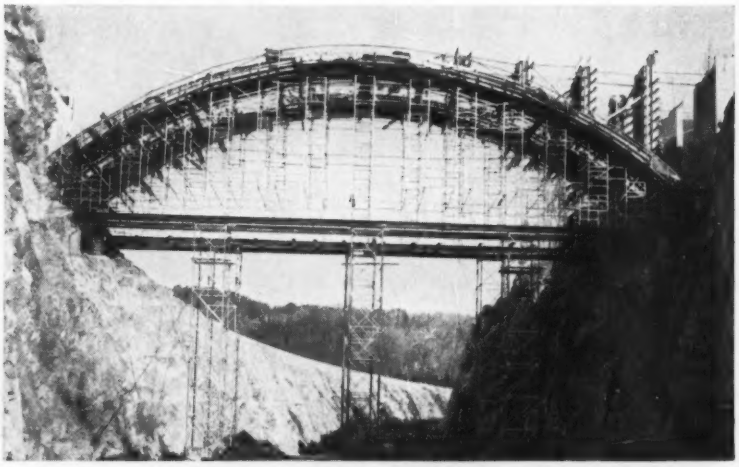
GULF

GULF OIL CORPORATION
Dept. DM, Gulf Building, Houston 2, Texas

G. M. Waldrep, left, Shop Superintendent of Morauer & Hartzell, and Fred Pope, Gulf Sales Engineer, beside pumps that delivered quality Gulf fuels at a job site recently.

GO-9-3290

New Heavy Duty 20K Frames Easily Shore . . .

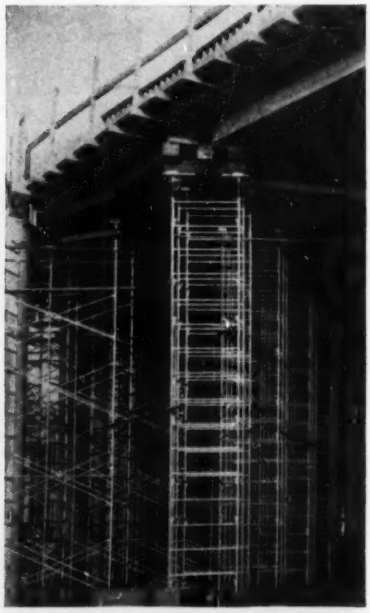


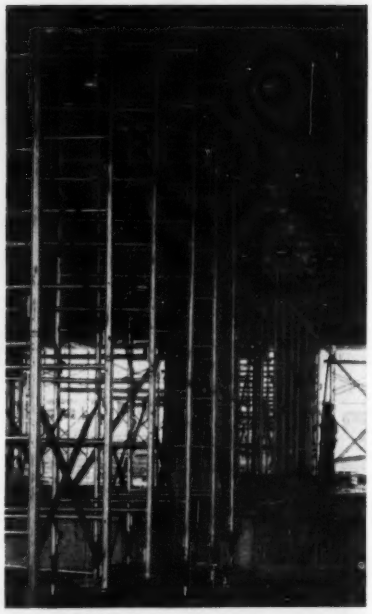
. . . 8'-wide ribbon arches

For the 143'-long concrete bridge at Hogback Dam, Riverton, Conn., PS Co.'s new 4'-wide 20K heavy duty frames (designed to safely carry 10,000 lbs. on each leg) of "Trouble Saver"® Sectional Steel Shoring are quickly erected and spaced atop long I-beams to support 9,000 lbs. per leg imposed by columns and two ribbon arches 8'-wide by 1½' to 3'-thick, 34' center height. This shoring is supported by six 48'-high towers of PS Co.'s Extra Heavy Duty Shoring, which carries a total load of 32,000 lbs. per leg. White Oak Excavators, contractor.

. . . 4'—5' Freeway girders

13,900 heavy duty 20K frames are now being used by Griffith Company, contractor, to support the heavy concrete box girder design of the six-mile Santa Monica viaduct connection, 15' to 33' high, to a Los Angeles Freeway. Bottom slab of box girders is 5½" x 6½" thick; top 5" to 5½" thick. Box depth is 4' to 5', made in three pours.





. . . 12¾" grid-type slabs

Here, 20K heavy duty frames are spaced 3'11" apart to support horizontal shoring for grid-type floor slabs. Floors in this 11-story Florida National Bank Building, Jacksonville, are 12¾"-thick. 20K frames are also used to shore heavy spandrel beams on the second floor only. George A. Fuller Co., contractor.

PSCo STEEL SCAFFOLDING • SHORING • SALES • RENTALS

THE PATENT SCAFFOLDING CO., INC.

38-21 12th Street, Dept. CM&E, Long Island City 1, New York
1550 Dayton St., Chicago 22 • 6931 Stanford Ave., Los Angeles 1
Branches in all principal cities
IN CANADA: Canadian PS Co., 329 Dufferin St., Toronto

◀ *Circle 37 on Reader Service Card*

Circle 38 on Reader Service Card

Project Superintendent, Jack Ryan, confers with Bridge Superintendent, T. Asack, whose vehicle is RCA 2-Way Radio equipped.

RCA 2-Way Radio Systems Help Campanella & Cardi to Beat Construction Deadlines!

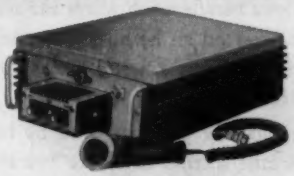
—*Integrate Construction and Concrete Operations*

"We couldn't be without 2-Way Radio! You can't measure the value of RCA 2-Way Radio in our operation," says Julius Papitto, Equipment Manager, Campanella & Cardi, Hillsgrove, R.I. "There are so many savings effected they're almost impossible to enumerate!"

With two separate yet integrated systems—one for construction operations, the other for concrete—RCA Radio lets this progressive contractor expedite men and machines better, get jobs done more efficiently and on time or ahead of schedule. The firm depends on radio to keep in constant and instant touch with plants, projects, repair cars, mixer trucks on the road and key personnel and vehicles in the field. Matching company growth, radio equipment consists of six base stations, 75 mobile units, and is still growing!

For construction and ready-mix operations, RCA "LD" (Low Drain) Radio will prove itself and pay for itself quickly out of savings. Ask your RCA representative; or for descriptive literature write RCA, Communications Products, Dept. P-203, 24 Murdock St., Canonsburg, Pa.

Mixer is alerted by 2-way radio to speed delivery to project.



You get dependability and economy with the new RCA "LD" Transistorized 2-Way Radio! Standard transistors used in circuits where long experience proves their reliability, where they do the best job in cutting down on costly battery drain. Priced considerably below other transistorized 2-way radios, comparable in cost to conventional tube-type radios—the "LD" is today's best buy in 2-way radio.

RCA®

The Most Trusted Name in Electronics

RADIO CORPORATION OF AMERICA

Circle 39 on Reader Service Card

The season's

Geo. M. Brewster & Son, Inc solution includes use of one dozer, this big 375 hp Michigan, to spread 25,000 yds daily on 3 fills

How would you handle a job where the state-specified borrow pit was on an island and the main fill was across 400 ft of river water . . . and where there were no bridges in between?

This was the puzzling problem faced by bidders on a 1,400,000 yd, 4 mile section of Route 129 Freeway near Trenton, New Jersey.

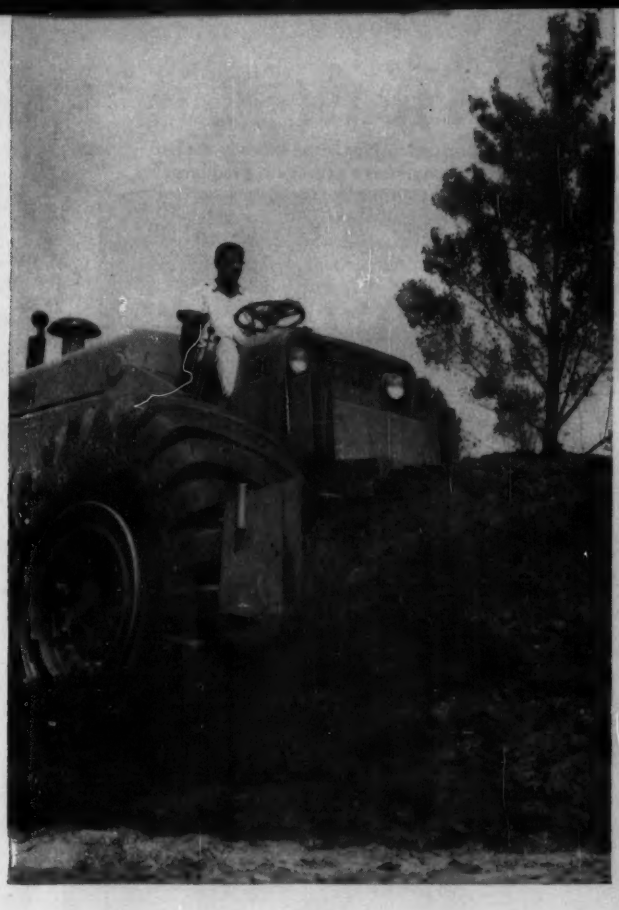
Think about it. What *would* be *your* method of bidding?

Would it be dredging? Some firms figured that way. Or building high trestles above the river to serve as haul roads? Or using barges to ferry fill across the water? Or what?

Flood danger makes speed essential

The successful bidder in this case had a different solution —one as novel as the problem. Geo. M. Brewster & Son, Inc, well-known Bogota, N. J. contractor, placed their bid, roughly $4,500,000, on a gamble. They would dam the inside channel of the river on its upstream side, let the water drain, then build several inexpensive earth causeways to the mainland fill area. The question was, "Could they move the necessary dirt quickly enough to avoid high water, yet economically enough to do the job at a profit?" For this river, the Delaware, has been known to rise at least 15 ft above its present normal stage. The bid was low . . . the job won . . . but speed became absolutely vital.

Fast mobile equipment and two 10-hour shifts per day were the basic choice. Yet for economy reasons a relatively small fleet did all work. A tractor-pulled and pushed belt-loader did the loading. Ten 16-yd bottom-dumps moved the fill. One machine—a high-speed 375 hp Michigan



most unusual job

Model 380 Tractor Dozer—handled *all* spreading.

Michigan replaces 2 or 3 crawlers

Brewster figures that because of its 25 mph speed and its power, the big Michigan replaced two or three large crawler dozers. *Working alone, it easily handled three separate dumping areas.* One pass forward leveled each long line of dumps . . . one in reverse back-bladed . . . then the Michigan would drive to another fill area where the operation would be repeated.

Tires help compaction

In this way, the one 375 hp unit took care of all 10 haulers and all fills. It regularly spread 25,000 yds of soft silty sand every 20-hour day. Despite high production demands, it even had time to clean up and make extra compaction passes. In fact, Brewster figures the large low-pressure tires on his 75,000 lb Michigan did the bulk of the compacting—even though the New Jersey Highway Department required final use of vibrating rollers.

Unit also reduces maintenance

In the final analysis, dirtmoving completed long before flood season, use of the big Michigan had cut costs in some extremely important ways. One, it alone did the work of several of the biggest crawler-dozers. Two, it completely eliminated track maintenance and repairs, which in sand like this, could total $10 per hour, or more! Three, it proved versatile enough to spread gravel sub-base as well as sand fill, handle emergency truck towing, and do much of the compaction on all 3 fills.

Michigan job-proved Tractor Dozers could do the same for you! Pick the size to fit *your job*—162, 262, 375 or *600 hp*—then call your Michigan Distributor for a demonstration. You name the time and place.

CLARK EQUIPMENT

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road, Benton Harbor 16, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

Circle 41 on Reader Service Card

HERE'S HELP FOR PROGRESSIVE PRODUCERS

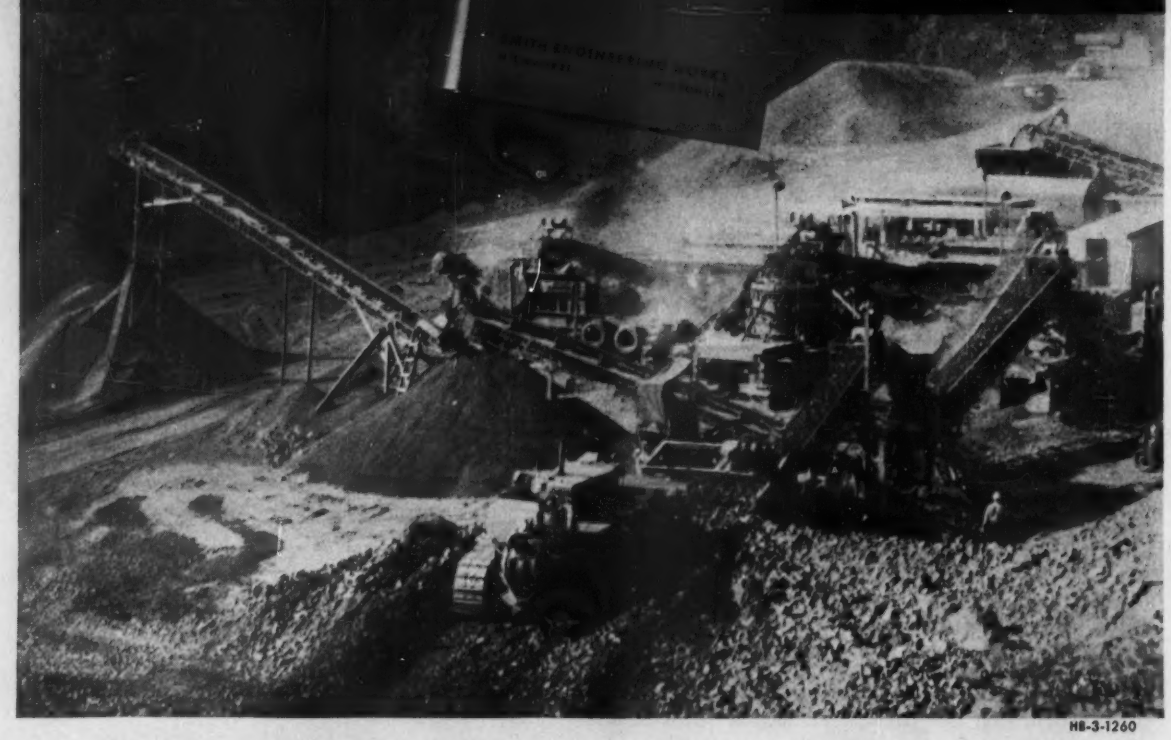
It's the authoritative *Handbook*—newly revised—used and prized by progressive aggregate producers everywhere. Complete information on aggregate and aggregate production machinery, with helpful engineering tables and charts. Saves going through a lot of different books. Its 128 pages (that *lie flat*) tell you what you want to know—*fast*.

NEW— REVISED—

THIS 128-PAGE BOOK IS YOURS FOR THE ASKING

HOW TO GET YOUR FREE COPY—Write your Telsmith distributor—or to the Smith Engineering Works, Milwaukee 1, Wis.—on your letterhead, stating your position.

PARTIAL LIST OF CONTENTS: Aggregate Requirements; and Specs • Aggregate for Concrete • Crusher Specs; Capacities; hp needs • Screen Analyses of Crusher Products • Belt Conveyors • Feeders • Pumps • Physical Properties of Rocks • Rod Mills • Screen Cloth • Screen Capacity Tables • Sand Classifiers • Storage Capacity Curves • Everything you need to know, from Abrasion Tests on Rocks to Weir Tables.



HB-3-1260

SMITH ENGINEERING WORKS
512 E. CAPITOL DRIVE, MILWAUKEE 1, WISCONSIN
DIVISION OF Barber-Greene

Cable Address: Songworks, Milwaukee • Representatives in Principal Cities in all Parts of the World

Circle 42 on Reader Service Card

What's A'building Here?

See Methods Memo, Pg. 142

PICTURE OF THE MONTH

Save on construction costs with the new '61 FORD TRUCKS

SAVE FROM $52 TO $221 ON PRICE* ALONE WITH FORD'S ECONOLINE PICKUP

Profit-conscious contractors are finding it's good business to do business with the new Ford Econoline Pickup. It's America's lowest-priced* pickup—bar none! Priced from $52 to $221 below other cab-forward economy pickups. But that's just the beginning! You get lively performance and proven gas economy with the popular Falcon Six. This modern engine goes 4,000 miles between oil changes, and has an aluminized muffler which lasts up to three times as long as ordinary mufflers.

And you can save more because Ford's functional design has pared away 1,000 pounds of dead weight, yet you still get the payload capacity of standard ½-tonners. The big 7-foot box provides a whopping 73 cubic feet of loadspace . . . that's up to 23% more than conventional 6½-foot pickups. A full 49-inch tailgate opening means you can load items like standard sheets of 4′ by 8′ plywood. And the full-length *flat* floor permits bulky or heavy loads to be positioned easily by sliding them anywhere in the pickup box.

And you can save on maintenance expense, too. The engine cover can be lifted quickly, exposing the entire engine for rapid service. Spark plugs, distributor, etc., are conveniently located to speed engine tune-ups. And many major repairs can be made without ever removing the engine. One-piece cab-and-body construction provides increased rigidity and eliminates a major source of rust. In addition, all main underbody structural members are heavily zinc-coated to resist rust and corrosion.

**Based on a comparison of latest available manufacturers' suggested retail delivered prices*

SAVE UP TO $150 ON FRONT TIRES! In certified tests of truck suspensions, Ford front tires lasted up to twice as long. In 50,000 miles savings can add up to $150 on a pickup . . . more on two-tonners. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's lowest-priced* medium-duty tilt-cab models now offer a big 262-cubic-inch Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved head and block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves and durable pyramid-type connecting rods. Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

The popular Ford Tilt Cab Series outsells all other makes and for good reason! Their compact 82-inch BBC permits longer bodies within a given over-all length . . . for longer loads of lumber and building materials with excellent maneuverability. And set-back front axle design means more weight is carried on the front axle for greater payloads.

You also save with other new features like the stronger radiator with new lock-seam construction, and color-coded printed instrument panel electrical circuits that provide for greater reliability and simplified maintenance. In addition, Ford's parallel ladder-type frame, with standard 34-inch width, allows you to install new or transfer your present special construction bodies quicker and for less.

NEWS OF MORE SAVINGS FOR HEAVY CONSTRUCTION WORK . . . ▶

Circle 45 on Reader Service Card

Save on construction costs with the new '61 FORD TRUCKS

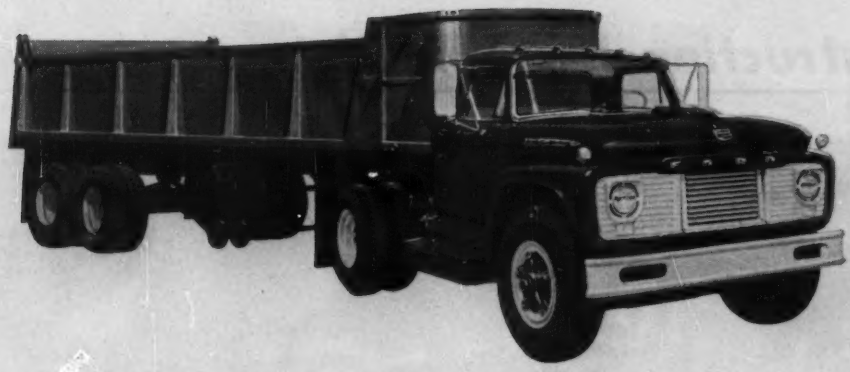
NEW SUPER DUTIES CUT OPERATING COSTS, GIVE PROVEN DURABILITY THAT'S BACKED BY A 100,000 MILE ENGINE WARRANTY

New 100,000-mile warranty on Super Duty V-8 gas engines is the most liberal in the industry. On 401-, 477- and 534-cu. in. V-8's, Ford Dealers will replace any major engine part (including block, heads, crankshaft, bearings, valves, pistons, rings) found to be defective in materials and workmanship providing trucks are used in normal service. The warranty covers full cost of replacement parts for 100,000 miles or 24 months, whichever occurs first . . . full labor costs for first year or 50,000 miles, sliding percentage scale thereafter. Never before have you had such protection . . . such evidence of long-term durability!

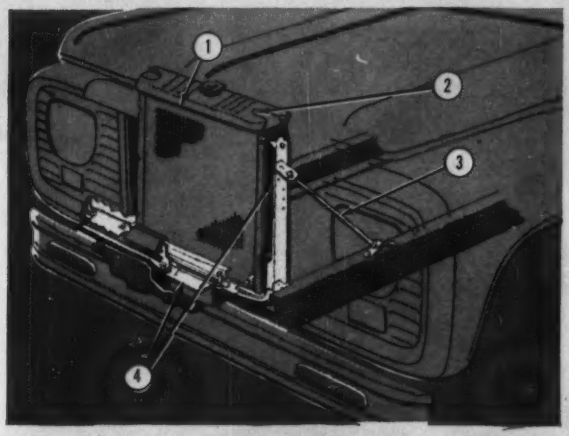
And you save with greater gas economy! Certified tests prove the new Super Duty V-8's give up to 20% better mileage. In addition, Ford's new lightweight, *extra-hi-tensile* single-channel frames (standard F-850—F-1000) give you long-lived durability combined with a lightness of weight for added payloads. All in all, you get proven components and design features . . . in trucks built for easier maintenance and lower running costs.

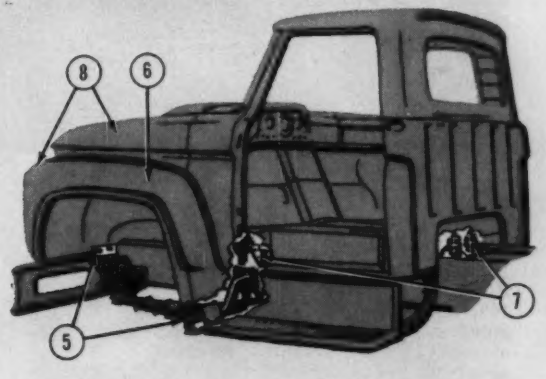
Save with Ford T-Series Super Duty Tandems for exceptional durability, big payloads and low operating expenses. Ford T-850 and T-950 Tandems with Super Duty V-8 engines have rugged double-channel, hi-tensile frames for maximum strength, minimum weight. And they provide a wider range of chassis options so you can choose the right power train and load-carrying components for any job. Eaton and Timken rear axles are now available in bogie assemblies with up to 38,000-lb. capacity. And lightweight aluminum walking beams, wheels and gas tanks are available to keep chassis weights low . . . payloads high.

Ask your dealer about Ford's full tandem line . . . five T-Series with GVW's ranging from 28,000 lb. to 51,000 lb. and GCW's up to 75,000 lb.



SAVE WITH NEW HEAVY-DUTY CONSTRUCTION THAT DOUBLES CAB, SHEET METAL AND RADIATOR LIFE





① **Save with Ford's exclusive "lock-seam" radiator construction** that doubles the solder area at key seams for greatly increased strength and longer radiator life.

② **Save with heavier-gauge metal on radiator tank and header.** Tanks and header have thicker walls to resist vibration, jolts and corrosion for greater reliability.

③ **Save with independent radiator mountings,** separate from front-end sheet metal. This means that road shocks and shakes are not transmitted to the radiator through sheet metal . . . tanks, tubes and connections last longer, require less maintenance.

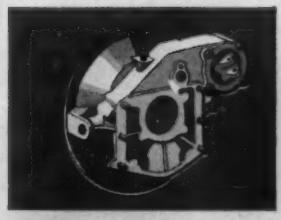
④ **Save with "horse collar" mounting** for extended radiator life. This new mounting on resilient rubber at the center of frame cross member soaks up any frame flexing . . . cuts wear and tear on entire cooling system.

⑤ **Save with independent fender mountings.** Fenders are bolted to a rubber-cushioned transverse bracket at the front and a frame-mounted bracket at the rear. This mounting, independent of both cab and radiator, eliminates stress transfers for increased fender life.

⑥ **Save with removable fenders.** The quick and easy removal of only 8 bolts per fender provides faster service accessibility to the engine area, saving valuable maintenance time.

⑦ **Save with new 3-point cab mounting system** for greater cab durability. Two outboard front mounts plus a centered "twin" rear mount provide a triangular system that holds the cab stationary while allowing the frame to move independently . . . reducing strain on the cab.

⑧ **Save with 42% heavier-gauge sheet metal** in fenders, hood, cab floor pan and toeboard for greater strength, greater durability.



Save with Ford's new Full-Torque flywheel power take-off . . . now available on T-750's and up, to power construction equipment like transit mixers. It's much simpler and more efficient than long, complicated hookups needed with the front-end drives. And the flywheel PTO is lighter in weight—only 105 pounds—for greater payloads.

FORD TRUCKS COST LESS

YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" PROVES IT FOR SURE...

FORD DIVISION, Ford Motor Company

Circle 47 on Reader Service Card

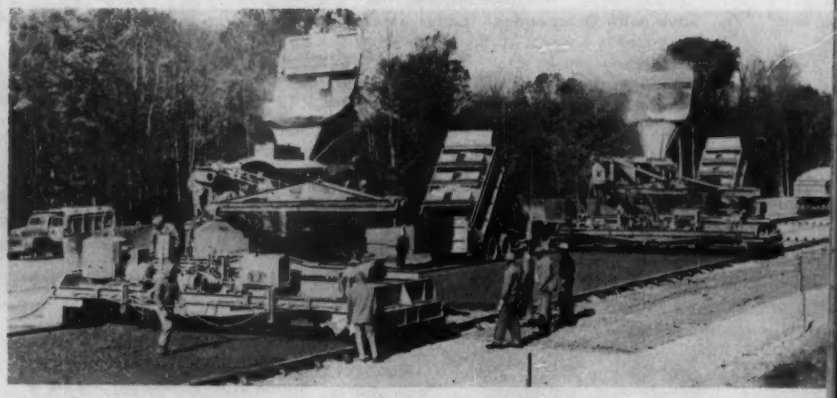
Construction News in Pictures . . .

Wading Tractors

Five Allis-Chalmers sideboom tractors (three HD-21's and two HD-16's) march into the shallow Black River near Willard, Wis. to plant a 160-ft section of 24-in. natural gas pipeline. The section, including eleven 2.5-ton weights, weighs about 55 tons. Panama, Inc. of Houston is laying 66 mi of pipe for Midwestern Gas Transmission Co.

Reaching High

Universal-Liebherr tower crane stretches high into the air to place a 100-ft, 2.5-ton antenna pole on top of the framework for the new Canton, Ohio, City Hall. The pole was fabricated in two sections by The Union Metal Mfg. Co. of Canton, assembled in a horizontal position on the roof, and then lifted in one piece to its final vertical position.



Fast Paving

Paving train of the Nello L. Teer Co. of Durham, N. C., lays down an average of 2,500 ft of 24-in.-wide pavement per 10-hr day on the Washington Circumferential Highway. Koehring Tribatch paver heads the train to lay a 6-in. bottom course that is leveled by a Blaw-Knox spreader. Then Twinbatch paver lays 3-in. top course.

"I Like Bethlehem bolts so much I built this just for fun!"

You'll like Bethlehem bolts, too. They're tops in quality. All sizes and types of carriage, lag, and machine bolts and nuts are available for quick delivery.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Circle 50 on Reader Service Card ➤

EUCLID
all-wheel drive . .

. . . pays off in all-job versatility!

For high productive capacity and all around work-ability Euclid "Twins" are way ahead of other scrapers of comparable size. No matter what your scraper requirements may be—"mountain goat" climbing ability, pushing through high rolling resistance sand and heavy going, or working in good dirt—all-wheel drive "Eucs" get more work done on every job.

Both the TS-14 and TS-24 have proved outstanding performers and big producers on a wide range of work from big yardage projects to smaller jobs. With separate Torqmatic Drives and power trains for each axle, these "Eucs" work on grades and under adverse job conditions that stall other scrapers. Each is a one-man earthmoving spread that can work without a pusher tractor . . . each has plenty of power and traction to pick up a heaped load in a hurry . . . pull out of the pit fast . . . and really highball on the haul to the fill and return.

If you want 14 or 24 yd. scrapers (20 and 32 yds. heaped) that can work more days per year . . . that can handle more kinds of work and give you bigger production . . . ask your dealer for the facts and figures that show why all-wheel drive Euclid "Twins" give you a better return on your investment.

EUCLID **Division of General Motors, Cleveland 17, Ohio**

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

TS-14 *296 total h.p. . . . struck capacity of 14 yds. . . . 4-speed Torqmatic Drives with converter lock-up.*

TS-24 *563 total h.p. . . . capacity of 24 yds. struck, 32 yds. heaped . . . 27.00 x 33.5 tires with 33.5 x 33 optional.*

GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

MORETRENCH EQUIPMENT PREDRAINS WORLD'S LARGEST DRY DOCK

When the U. S. Navy undertook to build the world's largest dry dock, a formidable foundation problem faced the engineers. The site was partially on "made" land requiring 600,000 cubic yards of dredging and 1,300,000 cubic yards of fill.

A fully-relieved type of dock was designed, in the construction of which an elaborate Moretrench drainage system to relieve the groundwater pressures was a key element.

The cross-sectional sketch at the right shows the general pumping plan. A system of Moretrench submersible-type deep well pumps augmented with a perimeter stage of Moretrench Wellpoints gave the contractor a dry, unobstructed working area about 1200 feet long and 220 feet wide, 65.2 feet below mean high water.

Additional wellpoints are being used to dewater the pump well area to a total depth of 84.3 feet below mean high water.

Photo on the left shows the cofferdam being constructed; photo on the right shows the excavation being bottomed out after predrainage, with drainage course material being placed in the foreground.

MORETRENCH

389 Main Street
Hackensack, N. J.
Tel. Hubbard 9-7676
N.Y. Tel. Cortlandt 7-2283

4900 S. Austin Ave.
Chicago 38, Illinois
Tel. Portsmouth 7-4212

General Offices
Rockaway, N. J.
Tel. Oakwood 7-2100

7701 Interbay Blvd.
Tampa 9, Florida
Tel. 61 — 1871

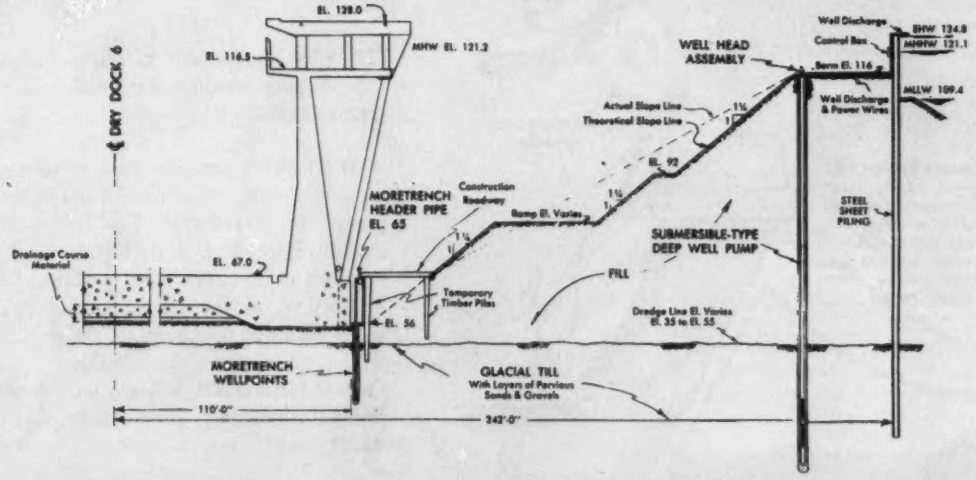
315 W. 25th Street
Houston 8, Texas
Tel. Underwood 4-7774

Dry Dock No. 6
Carrier Repair Site
Puget Sound Naval Shipyard
Bremerton, Washington

Architect-Engineers: Moran, Proctor, Mueser & Rutledge, New York — Carey & Kramer, Seattle, Washington

Contractor: Manson-Jones-Perini-Osberg
Bremerton, Washington

Pumping Contractor:
American Dewatering Corporation,
Rockaway, N. J.



This project was under the supervision of the District Public Works Office, Thirteenth Naval District, Seattle.

CORPORATION

WESTERN REPRESENTATIVE
Andrews Machinery of Washington, Inc., Seattle

CANADIAN REPRESENTATIVE
Geo. W. Crothers Limited, Toronto, Ontario

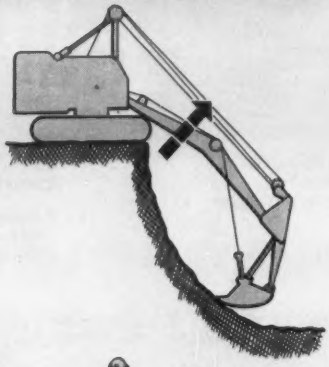
BRAZILIAN REPRESENTATIVE
Companhia Oscar Taves Comercial e Tecnica, Rio de Janeiro - Estado de Guanabara

BRITISH REPRESENTATIVE
Blaw Knox Limited London

Say goodbye to these two problems of backhoe operation!

PROBLEM 1: *Limited dipper penetration* in rock or other hard materials . . . with resulting slowdowns, extra shooting, or repeated chopping to get a "bite". This problem exists with *all* backhoes where dipper penetration depends solely on weight of boom, dipper stick and dipper.

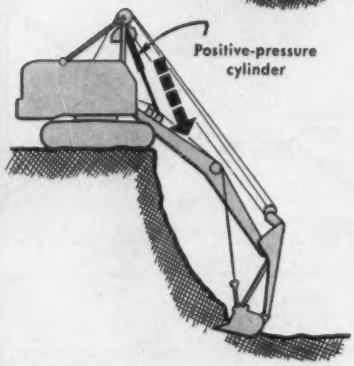
SOLUTION: AMERICAN's positive-pressure attachment automatically *locks boom in position* as soon as inhaul motion begins. Bucket is *forced* into hardest materials, utilizing almost *full weight of machine*. You penetrate rock and hard or frozen ground without repeated chopping . . . increase output, reduce chance of cave-ins.



Ordinary Hoe: During inhaul of dipper, boom is free to "ride up", permitting dipper to slide over surface, or take shallow bite.

PROBLEM 2: *Partially filled dippers.* This, too, is a result of boom being free to ride up . . . a factor that limits production *even in easy materials,* and especially on deep and close-in digging.

SOLUTION: Again AMERICAN's positive-pressure digging provides the answer . . . see diagrams at left.



Positive-Pressure AMERICAN: At start of inhaul, cylinder automatically locks boom in position (because fluid in cylinder can't be compressed). Dipper is therefore forced downward into cut, with 50 to 300% more down pressure at dipper teeth.

AMERICAN's positive-pressure system is extremely simple and trouble-free. There are no pumps, no powered mechanisms of any kind. Equally important, AMERICAN's positive-pressure attachment can be used on a *full* range of sizes, ½ to 4½ yards . . . on *any* AMERICAN backhoe, new or in the field.

Only AMERICAN has it! Get details *now.* Write for bulletin . . . or see your AMERICAN distributor. B-708

AMERICAN

AMERICAN HOIST and DERRICK COMPANY
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EXCAVATORS ½ to 4½ yds.	DERRICKS-HOISTS to 800 tons	CROSBY-LAUGHLIN DIVISION
CRANES 12½ to 110 tons	REVOLVER CRANES to 400 tons	Forged fittings for wire rope, chain

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Construction Methods AND EQUIPMENT
VOLUME 43 • NUMBER 1
HENRY T. PEREZ, Editor

BLUEPRINT FOR '61

Once again the construction industry starts off a new year with high hopes and bright prospects. The special report on the following pages makes this abundantly clear. But it also points out that there is no automatic prosperity built in for the contractor.

One encouraging sign is that bid price indexes for highways and heavy construction have turned upward, possibly reflecting a lessening in the suicidal competition that has forced many contractors to the wall. Another is the forecast that contract awards will rise 5% over last year's record level. Awards will be up in almost all categories. Earthwork-dams-waterways awards will climb 36%, for example, and highways will be up by 15%.

On the labor scene, rates will go up. And you can look for legislative action that will raise and extend the minimum wage law and allow common-situs picketing on construction jobs. Trouble is likely to continue within labor's own house as craft and industrial unions battle over work assignments.

A bright spot is the materials situation. Cement and steel will be in good supply, with only spotty price rises in prospect. And more of the newer construction materials—plastics, aluminum, and alloy steels, for example—will find increased use on construction projects.

In field operations, look for an increase in welded structures as building codes become more uniform. In roadbuilding there will be an upsurge of slipform paving and increased use of central-mixed concrete. A new foundation technique may radically change present thinking on how to build them.

As for construction machinery, manufacturers will introduce fewer completely new units than they have in the last few years. But there will be plenty of improvements in existing models. As usual, many of these will aim at greater productivity by increasing power, speed, and size. And all-purpose machines will continue to vie with the specialized tool in all size ranges. In any event, the contractor will get more for his machinery dollar.

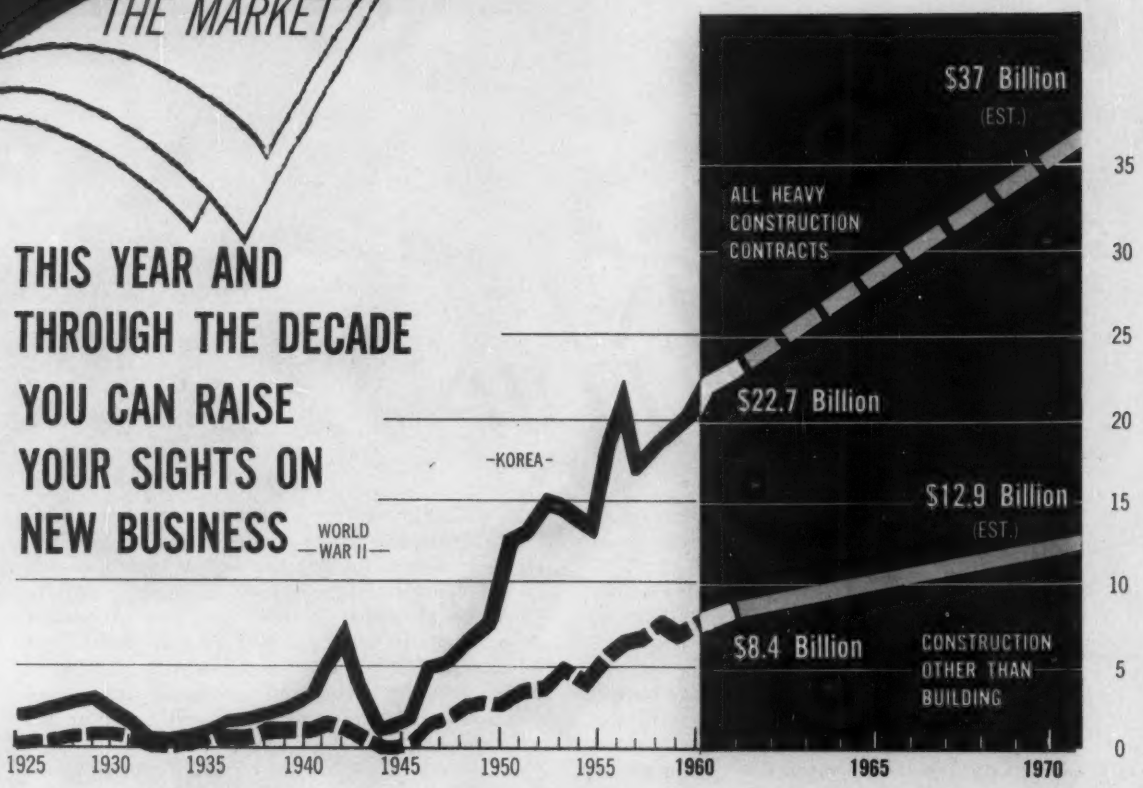
While 1961 holds great promise, it can prove a dud—or worse—for the unwary contractor who does not bid realistically. When you fail to know your actual costs, and don't include a profit in the bid, disaster is sure to follow. But those who follow prudent business practices will find 1961 to their liking.

A special report on the industry's future starts on the next page

BLUEPRINT FOR '61

THE MARKET

THIS YEAR AND THROUGH THE DECADE YOU CAN RAISE YOUR SIGHTS ON NEW BUSINESS



VOLUME WILL CLIMB 63% BY 1970

The Sixties Are Sizzling

The first year of the new decade was the biggest ever for heavy construction. Contract awards reported by CONSTRUCTION METHODS jumped 11% to an all-time high of $22.7 billion.

But 1960 was only the beginning. Contract volume this year will reach $23.7 billion—a 5% increase over 1960's record.

And by 1970 annual volume should hit $37-billion—63% higher than 1960 and triple the dollar volume of heavy construction awards in 1950.

To put it mildly, the Sixties really are sizzling. The early years of the new decade will make the boom period of the Fifties look puny by comparison.

For example, last year's contract volume was a whopping 83% higher than 1950. This year will offer 75% more business than in 1951.

It's true that cost increases carried over from the Fifties and continuing into the Sixties will puff up these award totals.

But there remains a healthy rate of real growth in the industry's annual volume of new business, and it is setting the pace for the over-all American economy. This is because increasing construction volume is a prerequisite for national economic growth.

So the industry will carry an increasing load during the Sixties. Plans are huge. Right now

there are $125 billion in heavy construction projects in the planning stage. This is almost two-and-one-half times greater than CM&E's Backlog of Proposed Construction 10 years ago, when it totaled $52 billion.

It's a safe bet that America never will catch up with its construction needs. The gap keeps expanding despite new records for contract awards because more work goes on the drawing boards than goes under actual construction.

Biggest roadblock to attaining the huge volume of contracting necessary to break the planning logjam is the limited availability of new capital to finance work. Although a record amount of new capital will be available to construction borrowers this year, it won't be enough to meet the demand.

As usual, would-be borrowers will be looking for more money than investors and lenders have available. Some seeking construction capital will be among those turned away.

With availability of new capital acting like a governor on the construction market's growth rate, contractors have been expanding their annual capacity faster than the market requires. Their record investment in construction equipment, plus technological advances of the 1950's, aggravated the sad predicament of many when the contract recession of 1957-58 occurred.

To keep the nucleus of their forces intact and to maintain the cash flow needed to pay off equipment, many contractors used their extra capacity to participate in a deadly price competition. This created the profitless prosperity of 1957 to mid-1960.

However, the sharp increase in new business last spring appears to have cooled competition a bit. Heavy construction and highway bid price indexes reflect this change as they reverse their downtrends; irrigation and hydro power construction cost indexes also are higher (*see charts on next page*).

The surge in business enabled 1960 to top 1956's all-time high and 1961 will top 1956 by a still greater margin. As the gap narrows between the construction industry's capacity to do work and the volume of new work becoming available, contractors' chances of winning jobs with profitable bids will increase.

The keen competition of recent years will have served at least two important purposes: It kept contractors pushing harder to develop new cost-saving methods to offset higher prices for wages, interest, insurance and taxes; and the rugged competition weeded from the ranks a record number of contractors and subs who bid themselves into bankruptcy (*See chart on next page*). But this is not to say that bidding won't be close in 1961. Any tendency to raise bid prices too much will be corrected quickly.

This is because the increase in this year's new business will be in the area where contractor competition is the keenest—public works.

Public works awards will take big jump this year . . . turn the page

FORECAST OF HEAVY CONSTRUCTION CONTRACTS...

In Millions of Dollars (000 omitted)†

	1959 Actual	1960 Estimated	% Chg. '59-'60	% Chg. '50-'60	SHORT RANGE 1961 Forecast	% Chg. '60-'61	LONG RANGE 1970 Forecast	% Chg. '60-'70
ALL HEAVY CONSTRUCTION—50 states	**$20,433**	**$22,665**	**+11**	**+83**	**$23,775**	**+ 5**	**$37,000**	**+ 63**
By Ownership—								
Private	10,431	12,185	+17	+ 83	12,100	− 1	19,550	+ 60
Public	10,002	10,480	+ 5	+ 84	11,675	+11	17,450	+ 67
State and Municipal	7,170	8,100	+13	+114	8,825	+ 9		
Federal	2,832	2,380	−16	+ 25	2,850	+20		
By Type of Work								
PUBLIC								
Waterworks	376	445	+18	+107	475	+ 7	900	+102
Sewerage	655	600	− 8	+109	700	+17	1,300	+117
Bridges (incl. private)	570	790	+39	+120	790	0	900	+ 14
Highways	2,899	3,380	+17	+167	3,880	+15	5,000	+ 48
Earthwork, dams, waterways	915	770	−16	+ 85	1,050	+36	1,350	+ 75
Buildings (excl. housing)	2,604	2,450	− 6	+ 2	2,750	+12	4,400	+ 80
Mass housing	591	660	+11	+ 84	600	− 9	1,200	+ 82
Unclassified*	1,404	1,395	− 1	+276	1,430	+ 2	2,400	+ 72
PRIVATE								
Mass housing	4,701	5,790	+23	+ 86	6,150	+ 6	9,000	+ 55
Commercial building	2,161	2,500	+12	+156	2,700	+ 8	5,000	+100
Industrial building	3,003	2,875	− 4	+ 71	2,550	−11	4,500	+ 57
Unclassified**	554	1,010	+82	+ 13	700	−31	1,050	+ 4

†Forecast in millions of current dollars by Business News Department of Construction Methods & Equipment. Fifty states in 1959-on, 48 states prior to 1959. *Mainly airports and missile bases. **Mainly pipelines, transmission and distribution lines (electrical), private-owned hydro power projects.

BLUEPRINT FOR '61

BUSINESS

This Year's Volume Will Set Records In Many Categories

Contractors can expect an 11% jump in new public works contracts this year. But a cut-back in industrial construction probably will cause private work totals to dip.

Biggest gains will be in earthwork-dams-waterways, up 36%; sewerage, up 17%; waterworks, up 7%; highways, up 15%; public nonresidential building, up 12%; and private commercial building, up 10%, according to CONSTRUCTION METHODS' forecast (*see table on previous page*).

This year's volume will set new records for every type mentioned except public nonresidential building.

Setting the stage for increased public earthwork-dams-waterways awards was the passage at last November's election of the proposed $1.75 billion California bond issue to pay for its 10-yr Feather River water resource program.

This project alone probably will add over $100 million per year to this construction market. Also look for more liberal federal policies on other new hydro and flood control dam starts.

Highway awards will rise this year as the Highway Trust Fund builds up fast enough to permit increased federal aid to the states. When the Bureau of Public Roads loosened its rein on state highway departments last summer few departments dipped in advance into the fiscal 1961 federal aid schedule.

Although the states did award a sharply higher volume of contracts in calendar 1960, the total apparently was accomplished without "borrowing" from calendar 1961 contracting potential.

Also, if the 1959 increase in federal gas tax is continued this year, the resulting income will add still more to highway and bridge contracting potential.

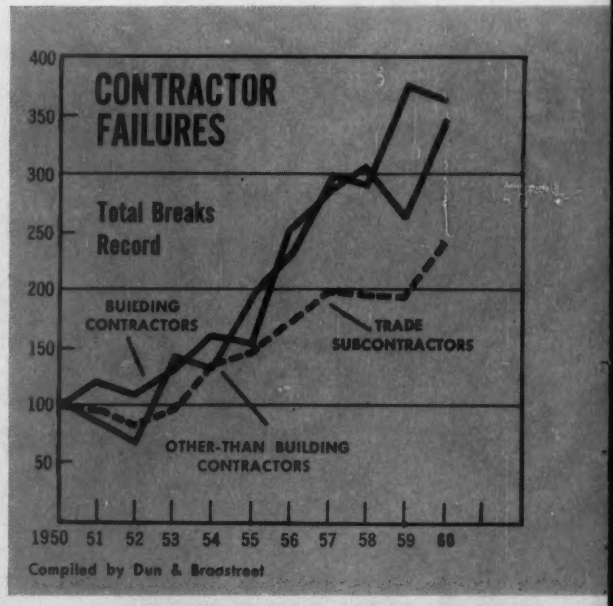
Commerical building will help offset the effects of lower industrial and pipeline construction contracts this year. The expected 10% rise in commercial building would lift this category above annual industrial contract volume for the first time in a quarter of a century

Although industrial building dollar volume will sag this year, there may be almost as many plants let as in 1960. The trend is toward smaller projects.

This trend will help to spread industrial jobs around until the next industrial building cycle begins. This resurgence probably will start by early 1962, or late this year—too late, however, to lift 1961's total volume above last year.

Less pipeline contracts will go to contractors this year, when compared to the all-time high racked up last year. This, by itself, will pull down the private "unclassified" volume of work.

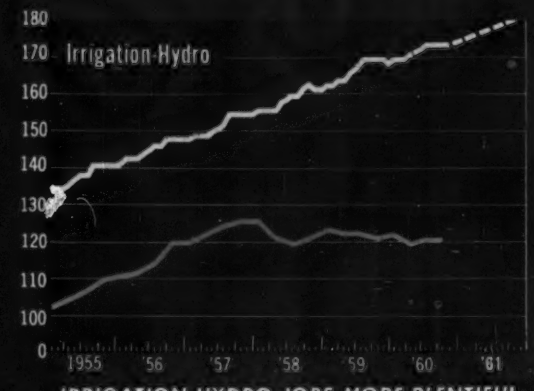
Housing heads for a better year than 1960, which was very big for mass homebuilders (those with developments costing $400,000 or more). Mortgage money has been more plentiful in the last six months and interest rates have become more attractive to prospective home buyers.



BID PRICE-COST GAP NARROWS

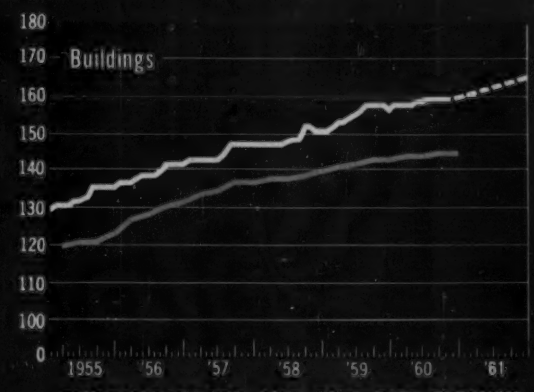
HIGHWAY BIDS PRICES TURN UP

Bid prices (blue line) reversed trend and turned up in third quarter last year following a surge of new projects. Costs also climbed, but at a slower rate.



IRRIGATION-HYDRO JOBS MORE PLENTIFUL

Bids in this category are firming up, indicating that more work is available. Construction costs (blue line) pulled out of their early 1960 tailspin.



BUILDING COSTS AND BIDS RISE SLOWLY

Selling prices (blue line) edged up last year but failed to match the increase in materials and labor costs. Climb for both was the slowest in last 5 years.

Public housing will receive a shot in the arm from the new administration, although fewer Capehart military housing contracts probably will pull the total for public housing contracts slightly under 1960.

These optimistic prospects for 1961 contracts reflect the 1959-60 upsurge in new plans. Engineers and architects designed more new heavy construction projects last year than in any other since the record years of 1955 and 1956.

As these projects clear the planning stage and move to construction contract status, contractors will increase their backlog of work underway. Of course, many of the projects proposed in 1960 won't be let for contract until 1962 or even later. But a large volume of public works already in the planning stage two or more years will be out for bids this year.

And the heavy backlog of work in this category points up the size of the boom facing heavy construction contractors throughout the Sixties.

ANNUAL AWARDS TO RISE $14 BILLION BY 1970

By 1970, heavy construction contractors will share $14 billion more in annual new business than in 1960. CONSTRUCTION METHODS estimates that annual awards in 1970 will reach $38 billion.

Setting the pace for an over-all 60% increase in annual private construction volume will be

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

In Millions of Dollars (000 omitted)

	Backlog 1960	November 1959	1950	% Chg. '59-'60	% Chg. '50-'60
TOTAL—50 states	**$124,688**	**$116,655**	**$52,113**	**+ 7**	**+139**
By Ownership					
Private	55,919	50,624	18,250	+10	+206
Public	68,769	66,031	33,863	+ 4	+103
State and Municipal	53,987	51,530	24,109	+ 5	+124
Federal	14,782	14,501	9,754	+ 2	+ 52
By Type of Work					
PUBLIC					
Waterworks	2,905	2,810	1,387	+ 3	+109
Sewerage	4,109	3,784	2,182	+ 9	+ 88
Bridges (incl. private)	3,294	3,416	1,647	− 4	+100
Highways	13,433	12,841	4,598	+ 5	+192
Earthwork, dams, waterways	12,180	12,110	7,282	+ 1	+ 67
Bldgs. (incl. housing)	22,683	21,170	12,050	+ 7	+ 88
Unclassified	10,165	9,900	4,717	+ 3	+115
PRIVATE					
Mass housing and Commercial bldg.	27,290	23,066	6,963	+18	+292
Industrial building	18,066	17,022	5,753	+ 6	+214
Bridges	101	89	45	+13	+124
Unclassified	10,462	10,447	5,489	0	+ 90

Projects reported by Construction Methods and Equipment

commercial building awards, which are expected to double.

Leading the over-all 67% rise in public construction will be waterworks (up 102%), sewage plants (up 117%) and earthwork-dams-waterways (up 75%). Highway construction will climb an estimated 48%.

The table on page 57 shows how the 1970 construction market might be made up by type of construction, based on our estimates of the growth potentials for each category.

Commercial Awards Will Double

The 100% estimated increase for commercial building awards reflects the steady rise in new plans for stores, offices, colleges, and other institution building. It points to the day when commerical building contracts will exceed industrial building awards in an average year.

Although commercial building annual contract volume has its ups and downs, these are minor fluctuations along a clear-cut growth path. Commerical buildings will probably remain the steadiest—as well as the fastest-growing—private market for contractors' services during the Sixties.

Chances have improved for a new federal school aid program that should spur school contracts along a much faster growth pattern than the over-all heavy construction market. Look for schools—elementary, secondary and higher—to take about 52¢ of public non-residential contract dollars by 1970. This compares with 39¢ in 1959, according to CONSTRUCTION METHODS figures.

The faster pace of secondary school construction will be necessary to accommodate mushrooming high school as well as elementary school population (which will resume its fast growth rate of the Fifties in the latter part of this decade).

Waterworks on the Rise

Exploding urban and suburban populations and increased per capita requirements will put waterworks among the fastest growing heavy construction markets of the Sixties. Congested suburbs will have to build sewer lines and treatment plants; many others will have to add more effective treatment facilities to protect water supplies. Look for increased federal pollution control funds to stimulate sewage treatment plant construction.

Earthwork-dams-waterway-irrigation contracts will start a new uptrend this year that will continue through 1970.

The new Democratic administration will probably accelerate this upswing by acting favorably on Corps of Engineers' recommendations to expand flood control construction to $500 million annually instead of the current $300 million a year. Meanwhile, California's Feather River project is expected to add another $125-150-million to annual contract volume over the next 10 years.

WAGES WILL JUMP 14c

Unions Expect Help From New Administration

With the new administration in power, union leaders believe they're sitting in the cat-bird seat.

Construction labor is expecting bigger and broader gains this year than in any year of the past decade. On important legislative matters, union leaders expect a hefty push from the White House to carry through for them on several fronts.

As far as wages go, construction labor is counting on an average 14¢-per-hr raise for building trade workers this year. This would be the highest rate of increase of any American industry group.

The pattern for wage increases through 1961 already is established. The many hundreds of long-term contracts that come due again this year have built-in raises averaging out to just over 14¢ per hr.

This level matches the 1960 average negotiated increase, and it insures that newly bargained settlements will come up to at least that standard.

Despite the 14¢ average for deferred increases from 1960 contracts, many built-in raises total far above that figure. For more than 70,000 craft workers this year's wages will climb twice, with increases coming along in both halves of 1961. Wage levels for this group will go up from 18 to 42¢ per hr.

The pattern for increases in the next 12 mo will look much like 1960, when wages climbed from 2.8% to almost 5%, depending on the craft. Biggest gainer last year was the electrical worker, whose wages increased by 4.9%. Other key trades showed these increases: building laborers, 4.7%; painters, 4.1%; carpenters, 4%; and plumbers, 3.1%. Average gain for all crafts was 4%.

Fringe benefits for health, welfare and pension programs also will show increases this year.

Union leaders expect the White House to help pass a $1.25 minimum wage bill this year. Senator Kennedy, as head of a Senate labor subcommittee in the last Congress, tried for such a bill and failed. But he's expected to succeed this time and has indicated that a minimum wage bill will have a top priority when he presents his legislative program to Congress.

Labor expects close cooperation from Kennedy along other fronts, too. This is the year AFL-CIO building trades leaders expect to capitalize on their long-term drive for legislation that would change Taft-Hartley's rule against construction site picketing.

With President Kennedy a firm supporter of their cause, the union chiefs will be making a major push for a situs picketing bill that would allow a craft union to picket a construction site regardless of its effect on contractors not involved in the dispute. Currently, where such picketing shuts off the work of a contractor not directly involved, it is an illegal secondary boycott.

One thing appears certain; the big legislative package coming from the last Congress—the Landrum-Griffin reform bill—will not be made stronger. Kennedy, as President, won't carry on the fight against labor racketeering via the legislative route. His position is that Landrum-Griffin took care of that situation. He thinks that even that bill is too tough on labor in some instances.

If the unions push it, Kennedy may back legislation to ease some Landrum-Griffin rules that now allow investigations and legal action by the Secretary of Labor against alleged wrong-doing.

But the racketeering matter is far from dead. The McClellan Investigation Committee of the Senate, which started the probe of union corruption in 1958, is staying in business.

No Solutions to Old Problems

Many nagging problems that persisted through the Fifties and last year will linger through 1961 with little hope of solution.

The need for skilled workers will continue to grow even more demanding. Don't look for a great surge in apprenticeship to ease the situation.

The jurisdictional battles between the craft and industrial unions of the AFL-CIO will continue. In fact, they are being fanned further by the union fight over jobs at missile sites.

The missile industry, currently the hot spot, may find the first solution because its problems are so acute. But even if the Kennedy administration should achieve a formula for settling missile job fights—such as a jurisdictional appeals board with final settlement authority—it won't be applied to the general craft-industrial job tangle. Once again, the contractor will be in the middle while AFL-CIO leaders seek a solution.

Discrimination on government contracts—a problem that involves contractors and unions alike—won't diminish this year. Craft unions practicing discrimination aren't about to give in and eliminate the color line all at once, despite pressure from the Kennedy administration. This means still more strife for contractors caught in the middle.

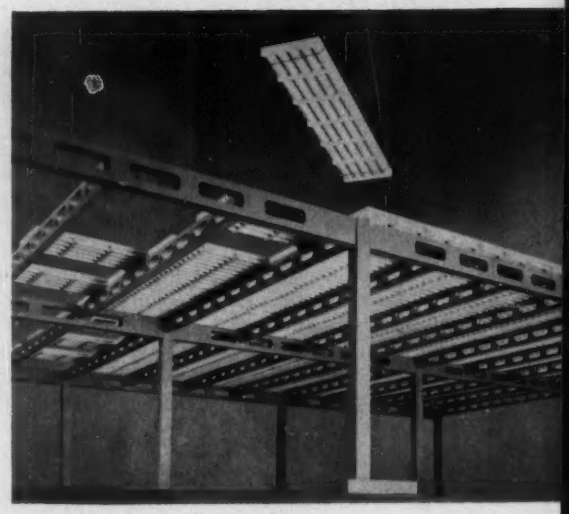
Materials easy to get but prices may go up slightly . . . turn the page

WAGES FOR KEY TRADES IN KEY CITIES

CRAFT	ATLANTA	BOSTON	CHICAGO	HOUSTON	LOS ANGELES	NEW YORK	SEATTLE	NATIONAL AVERAGE
Bricklayers	$4.00	4.05	4.22	4.00	4.20	4.80	4.15	$4.17
Carpenters	3.35	3.65	3.91	3.56	3.82	4.55	3.38	3.78
Electricians	3.90	4.10	4.30	3.92	4.65	4.15	3.95	4.04
Painters	3.40	3.35	3.75	3.36	3.73	3.64	3.46	3.56
Plasterers	3.50	3.80	4.00	3.75	4.25	4.70	3.72	4.03
Plumbers	3.85	4.02	4.05	3.62	4.33	4.45	3.89	4.02
Laborers	2.00	2.75	3.02	2.05	3.08	3.80	3.00	2.79

BLUEPRINT FOR '61

MATERIALS



SUPPLIERS WILL KEEP PRICE HIKES TO MINIMUM

New Materials Fight For Contractors' Dollar

Steel and cement will be easy to get this year, but prices may go up.

Look for a hike in the price of heavy structurals later this year. And in some parts of the country you also can expect to pay more for cement—how much more depends on local conditions.

But competition among materials producers will keep price hikes to a minimum. The contractor stands to benefit from the wide choice of products that are seeking his construction dollar. The basic construction materials—steel and cement—face increased pressure from newcomers such as aluminum and plastics.

Steel companies are feeling the pinch of slim earnings, a soft market, and rising labor costs. The first round of wage boosts resulting from last year's long steel strike went into effect Dec. 1. Last January a cost of living adjustment and additional fringe benefits increased labor costs.

Steel companies now are absorbing two-thirds of a total 30¢ negotiated wage increase, as well as recent boosts in rail freight rates. After two years of price stability, how long can they hold the line?

A powerful restraint against a big price hike is the industry's fear of losing hard-gained ground to competing materials and imported steel.

The industry would like to put off a price hike until the economy shows signs of recovering its balance. But a second round of wage boosts due Oct. 1 will almost certainly bring about a price rise before the end of the year.

The steel fabricating industry, which handles about 75% of the steel that reaches contractors, shipped an estimated 3,400,000 tons last year. This year fabricators expect increased volume in the last half to make up for a slow start.

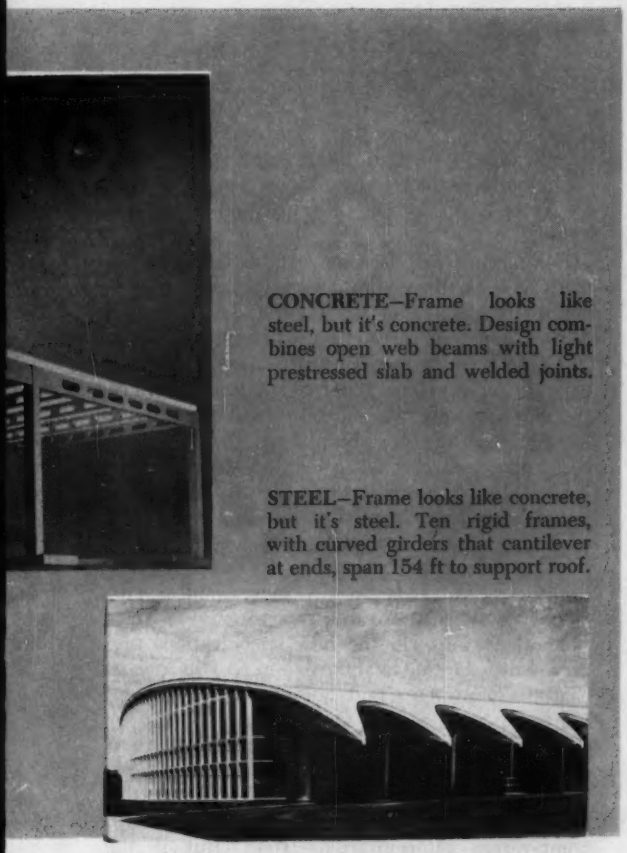
Don't worry about delays in shipments of orders. New orders will not tax fabricators' capacity (they shipped a record 4,200,000 tons in 1957).

To fight inroads made by competing materials, the steel industry is placing more emphasis on research. The eight largest steel producers will have increased their research staffs 25% by the end of the two-year 1960-1961 period.

Research will pay off this year with several new developments. Symbolic of the advances being made by the steel industry is the new edition of the AISC handbook, which will be published later in 1961.

The new specification covers A36 steel, which is likely to replace A7 as the basic structural steel this year. The new steel is 10% stronger than A7 but costs only $1.00 a ton more.

New sections available in 1961 will enable designers to take advantage of material savings offered by plastic design methods. Bethlehem recently introduced seven wide-flange sections that weigh an average of 10% less per ft than the lightest sections previously available. Bethlehem



CONCRETE—Frame looks like steel, but it's concrete. Design combines open web beams with light prestressed slab and welded joints.

STEEL—Frame looks like concrete, but it's steel. Ten rigid frames, with curved girders that cantilever at ends, span 154 ft to support roof.

also added 14-in. and 16-in. units to its line of lightweight beams. These new sections also will play an important role in the wider use of composite steel and concrete construction.

Scattered Hikes in Cement Prices

Policy of most cement producers is to set prices before January 1 and guarantee them to regular customers for the entire year. Reports from some large producers are not yet in, and no definite trend is evident. Some producers will raise prices slightly and others will hold the line.

Cement companies on the Eastern seaboard are holding the price line in the face of mounting competition from imported cement. One Eastern producer has cut cement prices 10¢ per bbl at its mills north of the Mason-Dixon line. Bulk cement prices in the Midwest are 5¢ to 10¢ per bbl higher at a few scattered shipping points. In the Far West, two major cement companies rescinded a scheduled price boost of 25¢ per bbl.

The cement industry had a rocky year in 1960. Estimates of shipments go as high as 315,000,000 bbl (the third highest total on record), but this represents a drop of 6% from the 335,000,000 bbl shipped in 1959. Operating at 75% of capacity, producers felt pressure from rising costs.

Nevertheless, the increasing quantity of foreign cement being imported into the country is forcing domestic producers to freeze prices in spite of the tightening cost-price squeeze. In 1959, imports almost doubled to reach about 5,000,000 bbl. They held near that level last year and threaten to reach or exceed it this year.

Most foreign cement entering the country is unloaded at three ports—Chicago, Miami, and Bridgeport, Conn. In these market areas competition will rule out price increases now. Elsewhere, scattered price hikes are a possibility.

Contractors will be able to get all the cement they need in 1961. Capacity of the cement industry will reach about 450,000,000 bbl by the end of the year. Demand will remain strong, but shipments won't exceed last year's total.

A new mortar cement may be available to contractors this year. Tests conducted by the Structural Clay Products Research Foundation and the Dow Chemical Co. indicate that a new high-bond mortar cement increases bond between mortar and brick more than five times. It may make it possible to halve the thickness of clay masonry walls. Another development being tested by SCPRF at Stanford Research Institute is an additive that will immobilize sulfate ions in mortar and prevent effloresence.

Plastics Grow in Popularity

Pointing up the tightening competition between materials is the increasing use of plastics in all kinds of construction applications. Contractors are using polyethylene and vinyl plastic film as enclosures around work areas in winter and as a vapor barrier under concrete floor slabs.

Foam plastic serves as insulation for concrete forms in winter. When cast into precast wall panels, it cuts the weight of structural units.

Epoxies are proving their worth as ingredients in bonding agents that join new concrete to old. In combination with a polysulfide liquid polymer epoxy resin provides a bond stronger than concrete itself. It's ideal for patching potholes in concrete pavement. Used as a mortar, it makes a strong joint between precast structural elements.

Other synthetic materials also are staking a claim in the construction field. Fiberglass is widening its services beyond thermal insulation to vibration dampening. Sheets of Butyl rubber are forming a water barrier beneath the slab of a new building.

An example of the acceptance of aluminum as a structural material is the spectacular roof of Coliseum 21, the $4-million theme structure of Seattle's Century 21 exposition. It is made up of 39,000 aluminum sandwich panels and 120,000 lb of extrusions (all fabricated by Reynolds Metals Co.). The four huge hyperbolic paraboloid roof sections will be suspended from cables fastened to concrete edge beams and steel trusses.

No matter what material a contractor needs this year, he will have the advantage of operating in a buyer's market. Continually tighter competition will keep prices relatively stable in 1961.

Job specs are beginning to catch up with new methods... turn the page

BLUEPRINT FOR '61

METHODS

NEW SPECIFICATIONS TO MATCH PROGRESS

Research, Competition Spark New Techniques

Fierce competition among construction materials makers is leading to a flood of new techniques that will benefit contractors this year.

In the struggle between prestressed concrete and steel for the structural market, concrete has made heavy inroads during the past decade. But the steel fabricating industry has been fighting back with increased research—and it will pay off this year.

Asphalt and concrete paving groups are in a neck-and-neck race for new and better techniques. Both groups predict significant new developments this year.

Other phases of the industry also will benefit from the growing surge of technological improvements that will change the nature of the construction industry during this decade.

STRUCTURAL STEEL – High-strength bolts are rapidly replacing rivets for structural work. A new specification, issued in 1960, permits up to 33% fewer bolts in many connections. This year will see more shop-bolting of fabricated structural steel.

Bolting has just become established, but already it is facing severe competition from welding. In fact, some of the biggest developments in steel construction in 1961 will be in welding.

Welding codes used in most cities since 1946 will be replaced in 1961. Substantial changes are certain. New specifications will permit automatic welding for buildings, a move that will lower costs for large welded structures.

Most bridge specifications already allow automatic welding. Now that building codes are accepting it, the American Welding Society is pushing for standardization of building and bridge codes. This would increase the efficiency of fabrication shops.

Another clause in the new specifications will pre-qualify certain standard joints. This means that the contractor will not have to test these joints.

The AWS will publish this year an important recommendation for welding reinforcing bars. In the past, there was disagreement on this subject because of the unpredictable chemical composition of reinforcing steel. But if the AWS proposals are accepted, contractors can expect to save time and money by welding rebars in place.

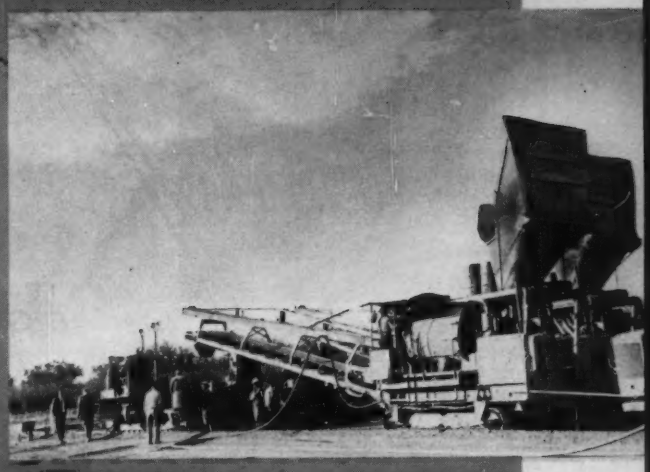
There is a good chance that most states and cities will reach some agreement to standardize qualifications for welders this year. This will eliminate the nuisance of a welder having to take a new test everytime he moves to a different location.

STRUCTURAL CONCRETE– It wasn't long ago that 15 stories were considered the limit for concrete buildings. Now they're putting up a 50-story structure—the Americana West Hotel in New York City—and talking of bigger ones.

One advantage of concrete for big buildings is that forms can be designed for a great many re-uses. As building codes are brought up to date with the latest technology, concrete will become increasingly competitive with steel for tall buildings.

CONCRETE PAVING – Slip forming for highway paving is on the verge of a major breakthrough this year. A Bureau of Public Roads survey shows that 17 states already have tried it, 16 more are planning to try it, and six more are interested. This is unusually fast progress for a new highway technique and it is indicative of the pace of change ahead in the roadbuilding industry.

Development of roadbuilding equipment is



BREAKTHROUGH—As more state specifications accept it, slip form paving will become a routine operation this year.

moving toward the point where a contractor puts concrete in one end of a rig and a road comes out the other. The Rex slip form paver is close to that objective already. It has eliminated most of the machines used in conventional paving trains.

Central mixing will see increased application this year. Ohio has been a strong pioneer of this technique. In 1959, Ohio contractors laid 2,000,000 yd of central-mixed concrete, representing a third of that state's total highway concrete.

Ohio seems to have proved once and for all that mixing time is not dependent on drum size. The state has cut mixing time for central mixers down to 90 sec., even less with certain types of mixers. Ohio results are being circulated to the rest of the country and there almost certainly will be an upsurge of interest in central mixing as a result.

Manufacturers are anticipating the trend. Central plants are becoming more efficient and more portable. This makes them economical for smaller-sized projects. Electronic controls now make most modern plants semi-automatic.

Within a year or two advanced controls, plus punch card batching, will allow one man to operate the plant from a remote location such as a dispatcher's office. Noble already has set up such a plant for a California outfit.

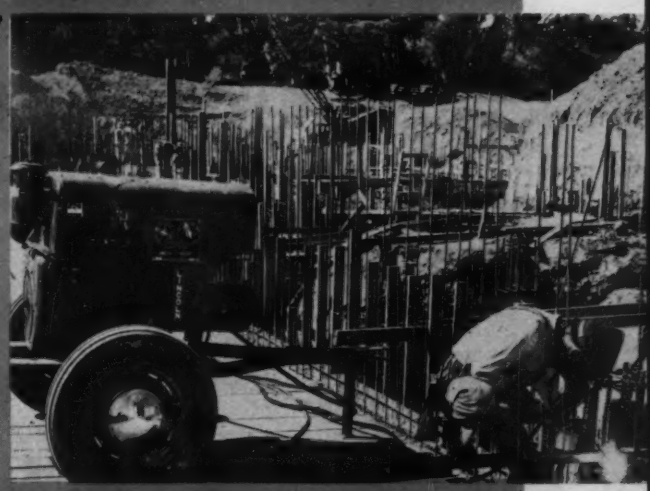
ASPHALT PAVING – Control of thickness always has been a problem in asphalt paving. It will be solved this year.

Already on the market and in widespread use is the electronic control for grader blades. This allows accurate grading of the base. This year, the major manufacturers will come out with a similar device for pavers that will control the top surface of the pavement. With assured accuracy of both top and bottom surfaces, thickness can be controlled.

COMPACTION – Continued study is bringing nearer the acceptance of end-result specifications for compaction. Both AASHO and ARBA have committees working on standards. New nuclear testing devices, pioneered by the Michigan State Highway Dept. and now available commercially, will speed soil testing and make it possible to specify end results.

The trend toward pneumatic rollers will continue. New developments, such as automatic tire pressure controls, are increasing the effectiveness of pneumatic compactors.

PLASTICS – Plastics are being used more in construction but, up to now, mainly for limited secondary roles. This year plastics may become



CUTS COSTS—American Welding Society will publish new recommendation for welding reinforcing bars. When accepted, rebars will be welded in place.

important partners to concrete in the structural field, if a development of the Dow Chemical Co. catches on.

Dow proposes Styrofoam as a means of cutting costs of thin shell concrete structures. Thin shells have become increasingly popular, but their use in the U. S. has been limited by the high cost of forming.

Dow proposes to form the shape of the shell in Styrofoam and pour the concrete on top. This would drastically cut forming costs and also provide thermal insulation.

F. J. McGarry of M.I.T. says, "The use of Styrofoam in the fabrication of thin shell concrete structures could prove to be one of the most significant advances in building technology since the advent of curtain wall construction."

New equipment will keep pace with new techniques . . . turn the page

BLUEPRINT FOR '61

EQUIPMENT

BIG CHANGES UNDER THE HOOD

New Drive Trains And Engines Are Manufacturers' Goals

The big news in construction equipment this year is under the hood. Manufacturers are engaged in research on every mechanical component—from power plants to wheels.

In 1961, look for these innovations and improvements:

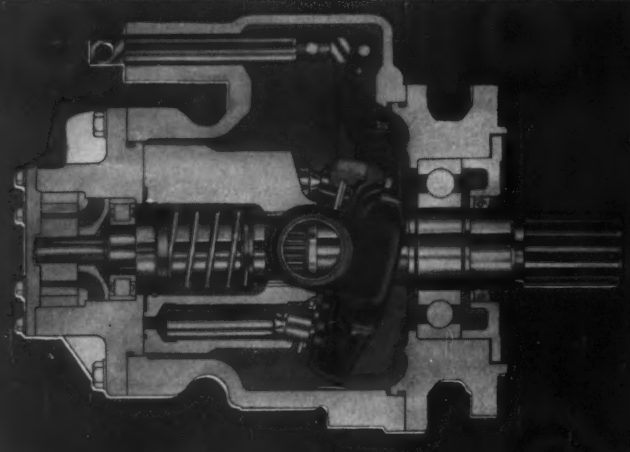
POWER PLANTS – The diesel will continue to be the workhorse, but gas turbines and fuel cells are in the research stage. A few already have been developed.

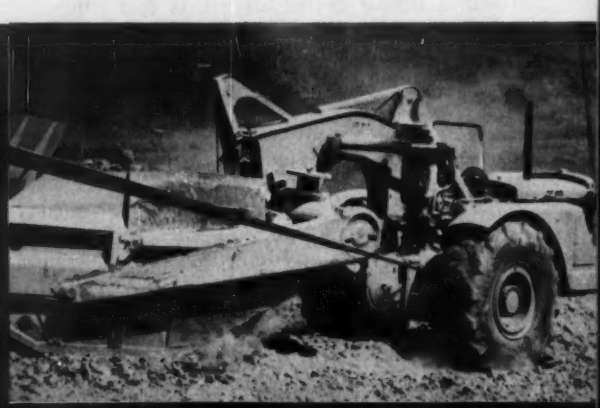
TRANSMISSIONS – Several versions of hydraulic power transmission units are in the works. One is slated for production this year.

IGNITION SYSTEMS – Electronics has invaded the engine compartment. A new ignition system utilizing transistors will be available soon.

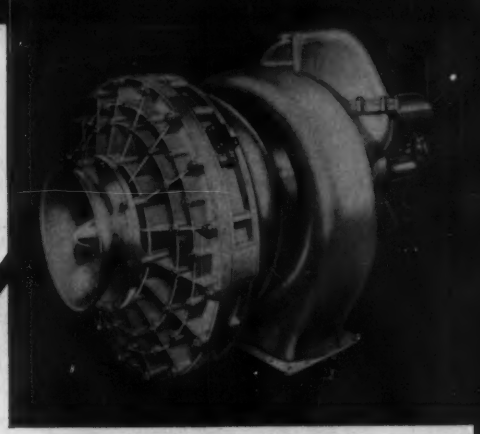
WHEELS – Big wheels will be bigger, and some will be powered by electric motors. Small wheels will be lighter because more aluminum will be used.

Manufacturers will introduce fewer new machines this year than in the last few years. The new rigs will include high-powered prime movers, tower cranes, large-diameter drilling and tunneling rigs, utility vehicles, and a machine that places reinforcing in concrete pavements.





TRANSMISSIONS—Several manufacturers are working on units that will use hydraulic pumps powering hydraulic motors to drive wheels of future machines.



ENGINE – Rugged gas turbine is designed especially for trucks and off-highway vehicles. It weighs 620 lb and develops 400 to 600 hp.

Most manufacturers are concentrating on improving the basic components of existing machines. Designers are working continually to improve today's engines, and at the same time they are developing the power plants of tommorow.

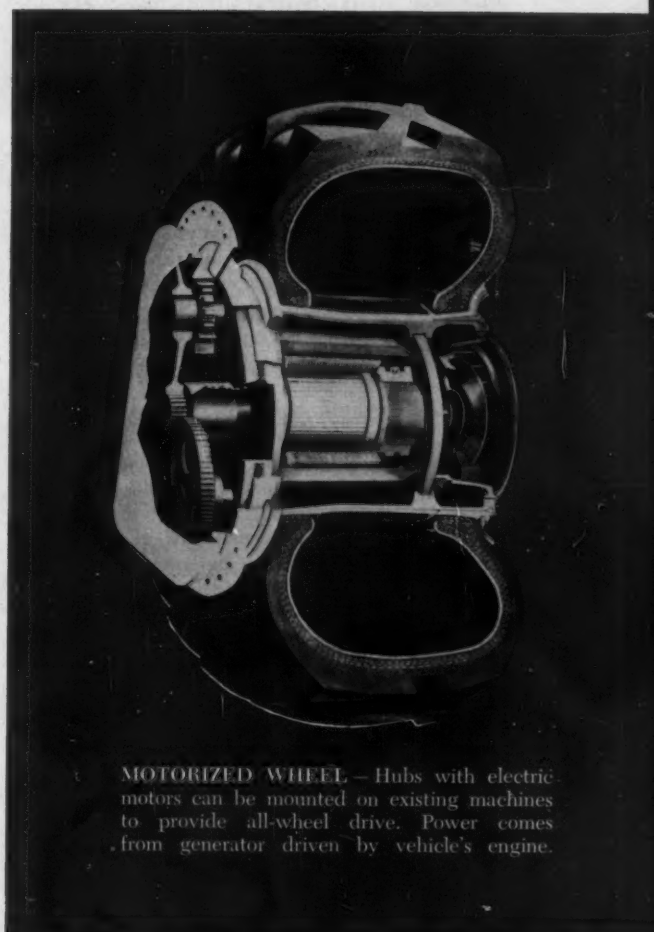
A good example is the gas turbine, which moved a step closer to becoming practical for construction machinery recently with the introduction of the Engiturbo by Waukesha Motor Co. This rugged gas turbine requires little maintenance. It is suitable for trucks and off-highway vehicles, but it has not yet powered production models of construction machines.

Unlike complex aircraft turbines, the Engiturbo's design is relatively simple. It incorporates a centrifugal compressor, an annular combustion chamber, a single-stage axial turbine driving the compressor, and a single-stage axial free power turbine. Engine weight, including fuel pump and control but no starter-generator, is 620 lb. The unit is rated at 400 hp, but output can be increased to 600 hp without changing the physical size. Output shaft speed is 3,600 rpm.

The new engine now is undergoing laboratory tests, and Waukesha expects that it will be several months before results are published. Other manufacturers also are working on the gas turbine for construction equipment, but designs are still in the experimental stages.

The search for other new power sources now centers on fuel cells to replace engine-generator sets for powering electrically operated machines. Vehicles equipped with fuel cells need only eight moving parts—four of them being electric wheels.

A fuel cell is a device for converting chemical energy directly into electrical energy. Usually



MOTORIZED WHEEL – Hubs with electric motors can be mounted on existing machines to provide all-wheel drive. Power comes from generator driven by vehicle's engine.

a fuel gas or oxygen is fed into the cells where it reacts with an electrolyte producing electrical energy.

Potentially, fuel cells are about 90% efficient as compared to 40% for some of the best internal combustion engines. Cells can be manufactured in units and assembled into power plants of practically any size. And they're easy to make because there are few close manufacturing tolerances.

Right now, at least fifteen companies are working actively on the fuel cell. Among these are construction equipment manufacturers, automobile builders, battery makers, chemical companies, and others. To date, a fork lift and a wheel tractor have run on fuel-cell power.

Estimates of when fuel cells will become a practical power source range from "next year" to "next decade." One expert expects to see "within three years a prototype of a high-speed, long-range, fuel-cell-driven electric car."

But before any of the new power sources come into general use, the gasoline and diesel engines of today will undergo a few changes, too. Most important will be a reduction in weight as more and more engine parts are made of aluminum or aluminum alloys. Several all-aluminum engines have been developed, and others are in the works.

Engine cooling systems also may change. New cooling system fluids will decrease engine maintenance and improve efficiency through better and more uniform cooling. And the advent of more efficient cooling will reduce the size of radiators.

A trend away from liquid-cooled engines may eliminate the radiator completely. Air-cooled gasoline engines, especially in low horsepower ranges, already are popular in this country. Most of these are on gardening equipment, but a fair share of them power a variety of portable tools used in the construction industry. Big air-cooled engines also are popular; they power aircraft and various military vehicles.

In the medium horsepower ranges used for most construction equipment air-cooled engines are relatively uncommon in this country, and air-cooled diesels are practically non-existent.

But in Western Europe air-cooled diesels enjoy wide popularity. More than 90% of all engines used in the German construction industry are air-cooled. Manufacturers produce air-cooled diesels in ranges up to 330 hp in Germany and up to 600 hp in England.

In the U. S. at least three engine manufacturers have produced air-cooled diesels in sizes up to 55 hp at 3,600 rpm. One of them utilizes aluminum and aluminum alloys extensively to keep weight to a minimum. The new engines run faster and develop higher torque. This makes them more adaptable for industrial applications.

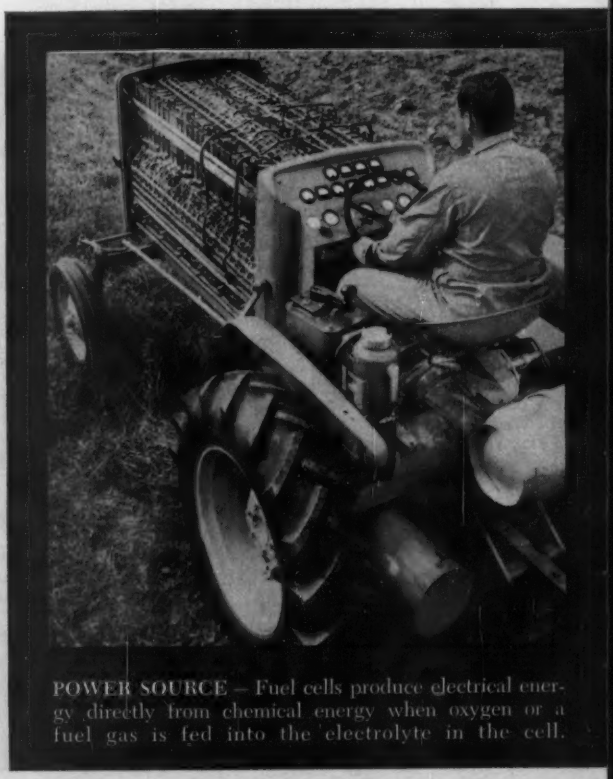
Air-cooling offers several advantages over water-cooling. The cooling system needs practically no maintenance and eliminates the need to stock coolants or antifreeze. Overhauling an air-cooled engine is easier because there are fewer parts to worry about. And the cooling system never can fail completely because the engine keeps operating even if the fan belt breaks.

Another advantage is that an air-cooled engine generally is laid out so that each cylinder is a complete unit. Very few parts are shared by adjacent cylinders. This building-block design principle requires only a small stock of identical parts to service a number of engines with from one to twelve cylinders. In Germany, Klockner-Humboldt-Deutz A. G. has used one basic engine model (Deutz FL 514/614) to assemble power plants for 16 different vehicles and machines with from 15 to 200 hp.

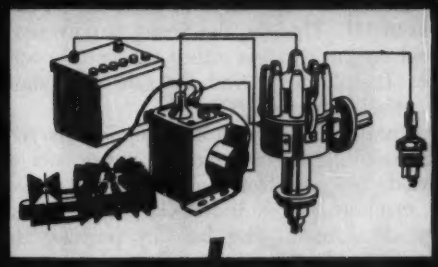
Other research and experiments dealing with power plants centers on the point of application of the power. A prime example is the motorized wheel. R. G. LeTourneau has been using the electric wheel on self-propelled machines for several years. General Electric developed a similar wheel in 1959.

To date, the G. E. wheel has been used as standard equipment on a 55-ton dump truck built by the Unit Rig & Equipment Co. A West Coast equipment manufacturer is planning a new line of construction machines powered by this wheel. The line will include scrapers, bottom and rear dumps, and rubber-tired tractors.

Of interest to maintenance men is the an-



POWER SOURCE — Fuel cells produce electrical energy directly from chemical energy when oxygen or a fuel gas is fed into the electrolyte in the cell.



IGNITION – Transistors, triggered by distributor contacts, switch the current and maintain a high voltage regardless of the engine speed.

nouncement by G.E. that additional models of its electric wheel, specifically designed for repowering existing machines, are available. Rim sizes range from 29 to 33 in.

Ignition Systems Will Change

Even if reciprocating engines don't change much in the next few years, ignition system might be in for a major overhaul. The newest development along this line utilizes electronics and the transistor. This system promises to be simple and dependable for use either as original equipment or as a replacement item.

Tests indicate that a transistorized ignition system can deliver over 100,000 mi of service without parts replacement and without any deterioration of the components.

The transistorized ignition system was developed by the Electric Autolite Co. Called the Transigniter, it is a high-voltage system that provides constant voltage regardless of engine speed. The company will place this system on the market by mid-1961.

Secret of the Transigniter ignition system is the transistor. It is a semi-conductor that has the ability to switch current with no moving parts. In the new system the coil is replaced by a special Transigniter coil, and the distributor condenser no longer is needed. The contacts' only functions are to trigger the transistor and time the firing of the spark plugs.

The distributor contacts in Autolite's system still make and break as often as in a conventional ignition system, but they switch only a very small control current and are not subject to electrical erosion. This reduces maintenance and cuts down ignition failures.

Hydrostatic Transmissions Have Promise

Gears, drive shafts, differentials, and axles may be on the way out for yet another reason—the hydrostatic transmission. It is a combination of hydraulic pumps and hydraulic motors connected by fluid transmission lines. A vehicle's engine drives the pump, the pressure it produces drives a motor, and the motor, in turn, drives a wheel or powers some other operating function.

Several American manufacturers are experimenting with such transmissions, and one of the new units is slated for production in 1961. This is the Dyanpower transmission developed by the New York Air Brake Co.

The unit consists of a variable-displacement, axial-piston hydraulic pump coupled directly to the vehicle's engine, and a fixed-displacement hydraulic motor driving into the differential. The differential can be eliminated by installing a separate hydraulic motor in each drive wheel.

Vehicle speed is controlled by varying the engine speed or by changing the pump's displacement with a cam inside the pump. The cam also controls the vehicle's direction. Conventional brakes and gear shifts are eliminated. The transmission delivers maximum torque at any engine speed, including idling, and it is about 80% efficient.

Production of a fork lift truck equipped with Dynapower is scheduled for this year. The transmission also has been tested on a tractor shovel, crawler tractor, scraper, and farm machinery.

International Harvester has a different type of hydrostatic transmission. It is composed of three parts—a pair of radial hydraulic motors, one for each wheel, and a variable-displacement pump coupled to the engine. A single lever controls speed, direction of travel, and braking.

This transmission has been installed in a wheel-mounted utility tractor for testing purposes. No production plans have been announced yet.

A third hydrostatic transmission, developed by Dynex, Inc., is scheduled for production in mid-1962.

The unit uses a split-flow pattern between the hydraulic pump and the hydraulic motors. The pump includes one or more pistons, and each piston powers a separate hydraulic motor in a drive wheel, steering assembly, loader mechanism, or other component. The pumps and motors can be of fixed or variable-displacement design and can be arranged in various combinations of either.

The Dynex unit has been tested in a wheel

NEW PLANT— Compact design and easy portability are two of the outstanding features of this mobile concrete batch plant. It produces up to 200 yd per hr.

dozer, a crawler tractor, and a scraper. In a LeTourneau-Westinghouse wheel dozer a single pump provides hydraulic power for both steering and operating the blade. In a Caterpillar crawler tractor the transmission gives the rig a creeper drive for operations in rough terrain that require high torque and low speeds. On the scraper, one pump powers two traction motors and delivers high torque during loading.

Another application of hydrostatic power has been tried by the Chain Belt Co. Engineers have installed a hydrostatic motor at the front end of a Rex truck mixer. It is coupled directly to the mixing drum and controlled by one lever. Drum speed is independent of truck speed.

More vehicle drive trains will be equipped with retarders, either hydraulic or electric, to help control speeds. Some retarders already are standard equipment, others are available for existing rigs.

Wheels, also, will change. Here again, aluminum will play an important part. Alcoa has announced an all-aluminum wheel in which the brake is cast as an integral part of the assembly. Such wheel-hub-brake units already are available on some new automobiles.

New Machines Are in the Works

International Harvester is experimenting with two wheel-mounted prime movers. One of the rigs is a 70-ton giant powered by two 375-hp diesel engines. It can pull 90,000 lb and is easy to maneuver because it bends in the middle. The other unit is the 4WD3, a four-wheel tractor with all-wheel drive powered by a 180-hp engine. It weighs up to 30,000 lb with ballast.

A small utility vehicle with a 100-in. wheelbase and an overall length of 13 ft also is in the works at IH. This rig, the Scout, is powered by a 4-cyl engine and has either two or four-wheel drive. It will be offered for sale very shortly at a price around $1,600.

On the paving front, a completely new rig to place reinforcing in concrete pavements will be tried on a test stretch of pavement this year. The machine places individual transverse and longitudinal reinforcing bars by pushing them into freshly placed slabs that have been poured to their full thickness. It also can place the bars on the surface of the first lift of any slab poured in two lifts.

The prototype of this machine places 12-ft-long, ¾-in.-dia transverse bars on 24-in. centers. Longitudinal bars up to 20 ft long and ¾ in. in dia can be placed on 7-in.-minimum centers. The machine can be modified to handle bars of different diameters and to place them at different spacings.

To date, no plans for the production and sale of this machine have been announced.

More slipform pavers will be developed in the future. Slipform paving has been tried in many states, and will be tried in many more. Thanks to improved controls, the quality of pavement produced by this method now meets some of the toughest specs.

Portable batch plants for asphalt and concrete will become more popular, and concrete plants for central mix paving operations will see the biggest gains because this method of paving is gaining wider acceptance. Typical of the new units are a Barber-Greene portable asphalt plant and a Heltzel mobile concrete batch plant. In both plants the components are mounted on individual running gear for towing to the job site where they can be put into operation in a minimum amount of time.

One piece of construction equipment enjoying growing popularity is the tower crane. Late last year Bucyrus-Erie introduced one such crane, and the Shlagro Steel Products Co. announced plans for a similar unit.

Some new machines will be used for drilling big-diameter shafts, sewers, and tunnels. A number of contractors have designed or built special drilling rigs to suit their purposes, but most of these rigs are one of a kind and are not intended for sale.

One machine that may be built commercially was developed by the Hugh B. Williams Mfg. Co. The prototype of this rig cuts horizontal holes 40 in. in dia, and other models for holes up to 18 ft in dia are planned. The test model has performed well in limestone and granite.

Other brand new machines will be arriving at distributors' showrooms, but the number will be below the average of the last few years. This is the year when manufacturers will work to make standard equipment do its job better, faster, and cheaper. In 1961, look under the hood—and at your production figures.

103
105
106

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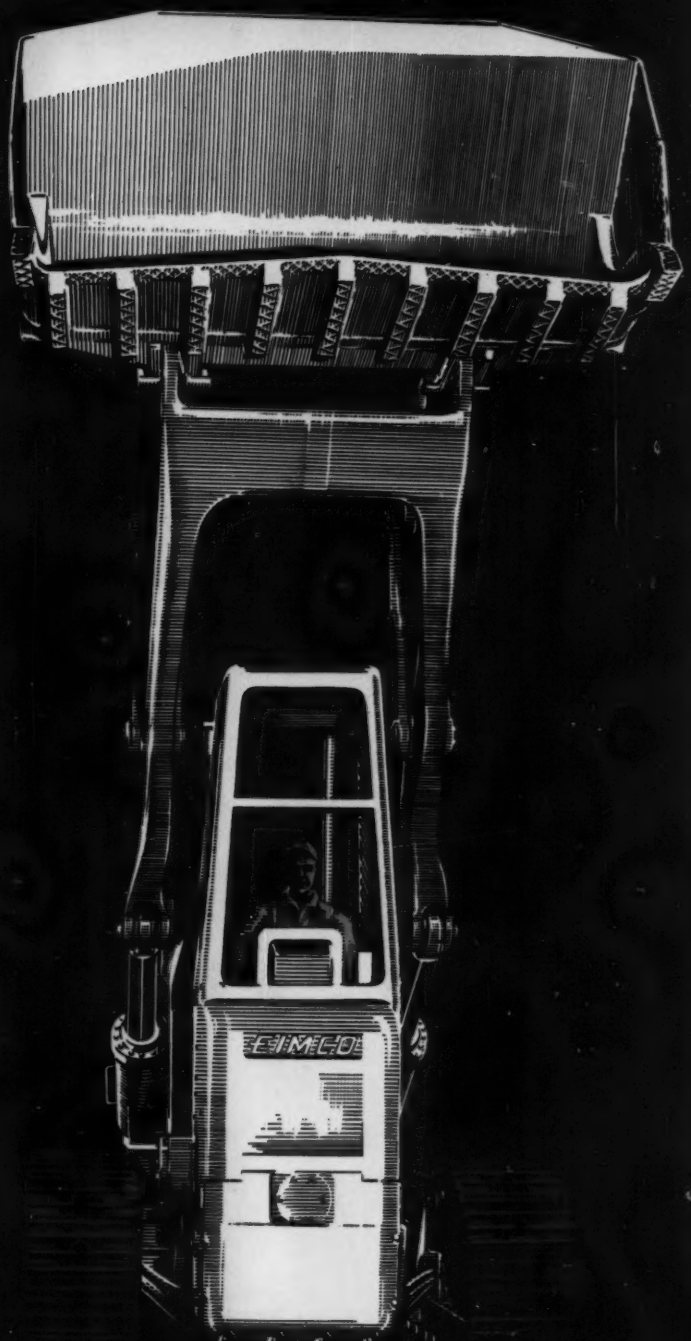
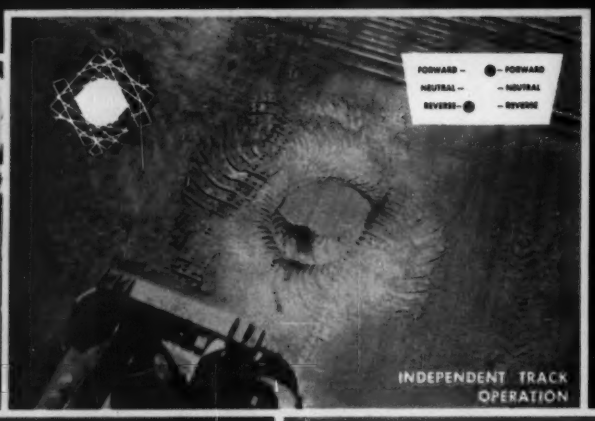


POWER SHIFT



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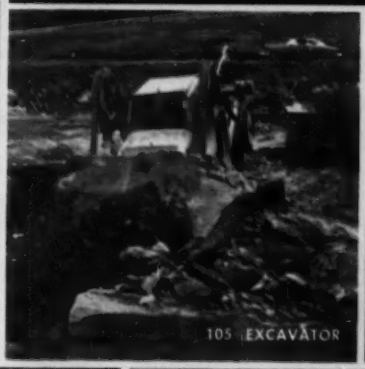
RUGGED CONSTRUCTION


105 EXCAVATOR

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How American Industry Points The Way To Sustained Prosperity in 1961

Something new and very constructive is happening in American industry. It promises to add a major element of strength to business not only in 1961 but right along over the years ahead.

What is happening is essentially this. **American industry is planning to continue to invest heavily in new and better producing facilities in spite of the fact that it has an excess of capacity to produce its present range of products. And, by doing so, business is helping to shape a stronger American economy.** For the continuation of a high level of capital investment by business is one of the most important keys to sustained prosperity.

News of this major new development in American industry is provided by the results of the McGraw-Hill Fall Survey of Business Investment Plans for 1961 and 1962, presented in detail at the right. The McGraw-Hill investment surveys, now in their 13th year, cover a broad cross-section of American industry.

How American industry is aiming to go ahead with a big investment program in spite of its present burden of excess producing capacity is highlighted by the plans of manufacturing companies. The McGraw-Hill fall survey finds that, on the average, these companies are using slightly less than 80 per cent of their producing capacity. They would like to be using well over 90 per cent.

Dramatic New Departure

If historic investment patterns were being followed, our manufacturing companies, with only about 80 per cent of their capacity being employed, would be cutting back new investment programs drastically, and cutting down prosperity in the process. **But — and here is the dramatic new fact — they plan almost no cut-backs in their investment programs.** They plan to invest almost as much (within 3%) in 1961 as they are investing this year. And this year they are investing 19 per cent more than they did in 1959.

There are two major reasons why American industry is unwilling to let its excess producing capacity stall its investment in new facilities until the capacity is more fully used. One is that a lot of this capacity is obsolete and costly to operate. Increasingly rugged competition is creating a strong inducement to replace this antique capacity with modern, more efficient equipment which is widely available.

PLANS FOR CAPITAL SPENDING
(Billions of Dollars)

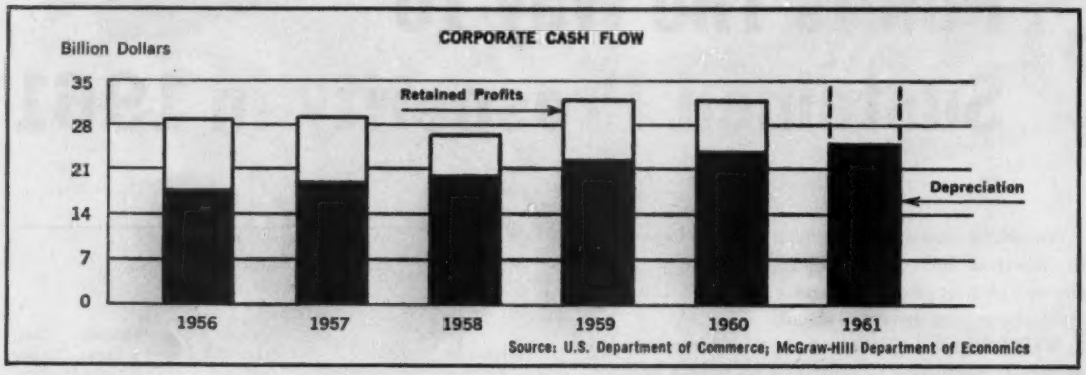
INDUSTRY	1959 Actual*	1960 Estimated*	1961 Planned	1960-1961 % Change	1962 Planned
Iron and Steel	$1.04	$1.52	$1.37	—10%	$1.18
Nonferrous Metals	.31	.34	.34	0	.32
Machinery	.91	1.15	1.11	— 3	1.11
Electrical Machinery	.52	.62	.68	+10	.63
Autos, Trucks & Parts	.64	.89	.95	+ 7	1.02
Transportation Equipment (Aircraft, Ships, R.R. Eq'pt.)	.39	.41	.37	—10	.35
Other Metalworking	.88	.97	.85	—12	.87
Chemicals	1.24	1.61	1.64	+ 2	1.59
Paper and Pulp	.53	.75	.69	— 8	.53
Rubber	.19	.24	.23	— 4	.20
Stone, Clay and Glass	.53	.63	.56	—11	.55
Petroleum & Coal Products	2.49	2.45	2.52	+ 3	2.50
Food and Beverages	.82	.94	.99	+ 5	.97
Textiles	.41	.53	.42	—21	.40
Miscellaneous Manufacturing	1.07	1.28	1.21	— 5	1.13
ALL MANUFACTURING	12.07	14.33	13.93	— 3	13.35
Mining	.99	.99	.90	— 9	.89
Railroads	.92	1.04	.79	—24	.83
Other Transportation & Communications	4.69	5.20	4.61	—11	4.18
Electric And Gas Utilities	5.67	5.89	6.14	+ 4	6.01
Commercial (1)	8.21	8.61	8.70	+ 1	8.54
ALL BUSINESS	32.55	36.06	35.07	— 3	33.80

*U.S. Department of Commerce, Securities and Exchange Commission, McGraw-Hill Department of Economics.

(1) Figure based on large chain, mail order and department stores, insurance companies, banks and other commercial businesses.

"R And D" Paves The Way

The steel industry provides a good case in point. Despite an operating rate of little more than 50 per cent during the last six months, steel companies plan a total investment of nearly $1.4 billion in 1961. And though this is 10 per cent below their capital expenditures in 1960, it will still be the third highest year on record.



Also, new investment is required to tool up for the manufacture of the new products being spawned by the continuing boom in industrial research and development. This year, we are spending about $13 billion (that's *billion*) for all research and development, about $9.6 billion of it through industry.* And out of it is coming the "know-how" for a veritable flood of new products, processes and equipment, most all of these calling for new producing equipment. Next year, American manufacturers plan to get 12 per cent of their sales in products that did not even exist four years ago.

Key Role Of Depreciation Reserves

A major reason why American industry can combine the desire to carry out big new investment programs with the necessary financial capacity to do it is to be found in the growth of its reserves for depreciation. This year, (1960), business has been in a squeeze between costs and the prices it could get for its products. This cost-price squeeze has reduced profits sharply. The total of profits for the year will be down about 5 per cent.

Allowances for the depreciation of existing plant and equipment, however, have continued to rise. The result is that the so-called cash flow of corporations (their retained profits plus their allowances for depreciation) is the same this year as last. And this cash flow, shown in the chart above, makes a decisive contribution to financing new investment.

Inflation Would Be Deadly

If the sort of profit squeeze that has prevailed this year were to become chronic, it would blight both the incentive and wherewithal to continue a vigorous program of new investment. In addition, if price inflation were to begin surging again, it would eat away the power of depreciation reserves to purchase new plant and equipment.

The allowances now permitted American industrial firms for the depreciation of their producing facilities are lower than those made in any of the industrial countries with which we are in increasingly tough competition. More adequate allowances would speed up the job of modernizing American industry. An earlier McGraw-Hill survey indicated that it would cost only slightly less than $100 billion to bring our nation's plant and equipment up to date.

But at this juncture, American industry's eagerness and capacity to maintain a high level of investment capital is adding a great new element of constructive strength to the nation's economy.

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*The significance of this boom for American industry is analyzed in a new McGraw-Hill book, "The Research Revolution" by Leonard Silk, Economics Editor of BUSINESS WEEK. Together with other new business investment trends the "R & D" boom also constitutes a key part of another new McGraw-Hill book, "New Forces in American Business" by Dexter M. Keezer and associates — the November selection of the Business Book Club.

This message was prepared by my staff associates as part of our company-wide effort to report on major new developments in American business and industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

Donald C. McGraw

PRESIDENT

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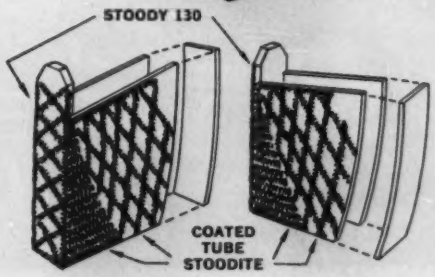
The mild steel sleeve is shown welded around the ripper shank. When badly worn it is easily replaced with a new sleeve.

HARD-FACING "Non-Weldable" RIPPER SHANKS

A simple method for hard-facing non-weldable high carbon ripper shanks now extends shank life almost indefinitely! Solution is a fabricated sleeve tightly fitted around the shank to which the hard-facing is applied. Side and back sleeve panels are cut from ½" mild steel plate. The front panel is 1" plow steel. After strength welding sides to front panel, the unit is slipped around the shank and the back panel welded in place.

Front faces of the sleeve and replaceable ripper tooth are protected with Stoody 130—*a semi-automatic wire containing tungsten carbide particles—extremely resistant to abrasion.* Since sleeve sides receive less wear they are adequately protected with Coated Tube Stoodite—*a high-alloy manual electrode.*



Occasional hard-facing touch-ups keep the sleeve in good condition. When further reclamation becomes impossible a new sleeve is easily installed. Thus, little actual wear ever reaches the ripper shank itself. The replaceable tooth is rebuilt and hard-faced, as required.

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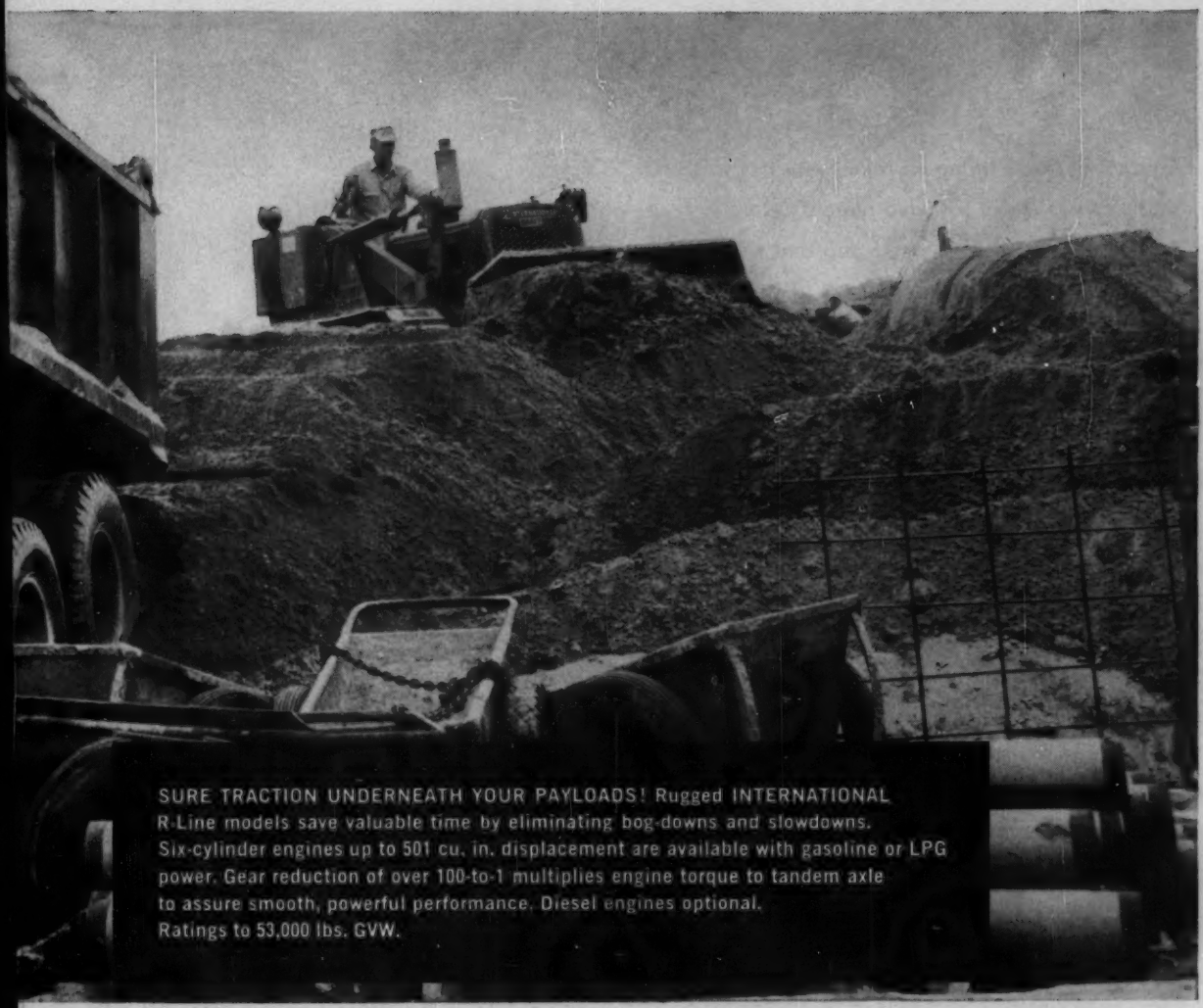

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One set of forms riding on roller bearings was used 13 times in the concreting of a folded plate structure to house a swimming pool. The 38-ton plates slope at 35 deg and were cast in place.

Complex Formwork Holds Concrete for Folded Plates

SLOPED FOLDED PLATES, each weighing about 38 tons, were cast in place using movable sandwich forms that completely enclose the pour and ride on roller bearings between pours. Thirteen pairs of these plates make up a 26,700-sq-ft structure to house a 65x150-ft swimming pool at Jekyll Island, Ga.

Plate slabs are 4 in. thick. Maximum width of a plate flange is 9 ft, and the width of one folded plate from ridge to ridge is 16 ft. The plates are 81 ft long measured from pile cap to the peak of the roof, which is 44 ft above ground.

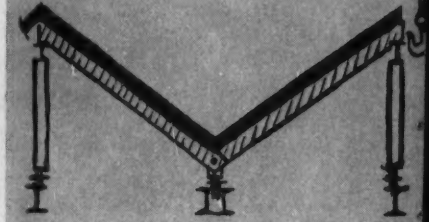
Movable formwork for the plates was designed and built by the Coite Somers Co. of Vidalia, Ga., general contractor on the project. The form for the top surface is fairly simple. It consists mainly of braced V-shaped panels assembled in sections that can be handled easily by a crane.

But the bottom form is more complex because it has to support the weight of the concrete, yet be movable between pours. Forms for the underside of each folded plate are moved as a single unit. They're made up of a supporting framework resting on timber poles and a collapsible form section for each flange of a folded plate.

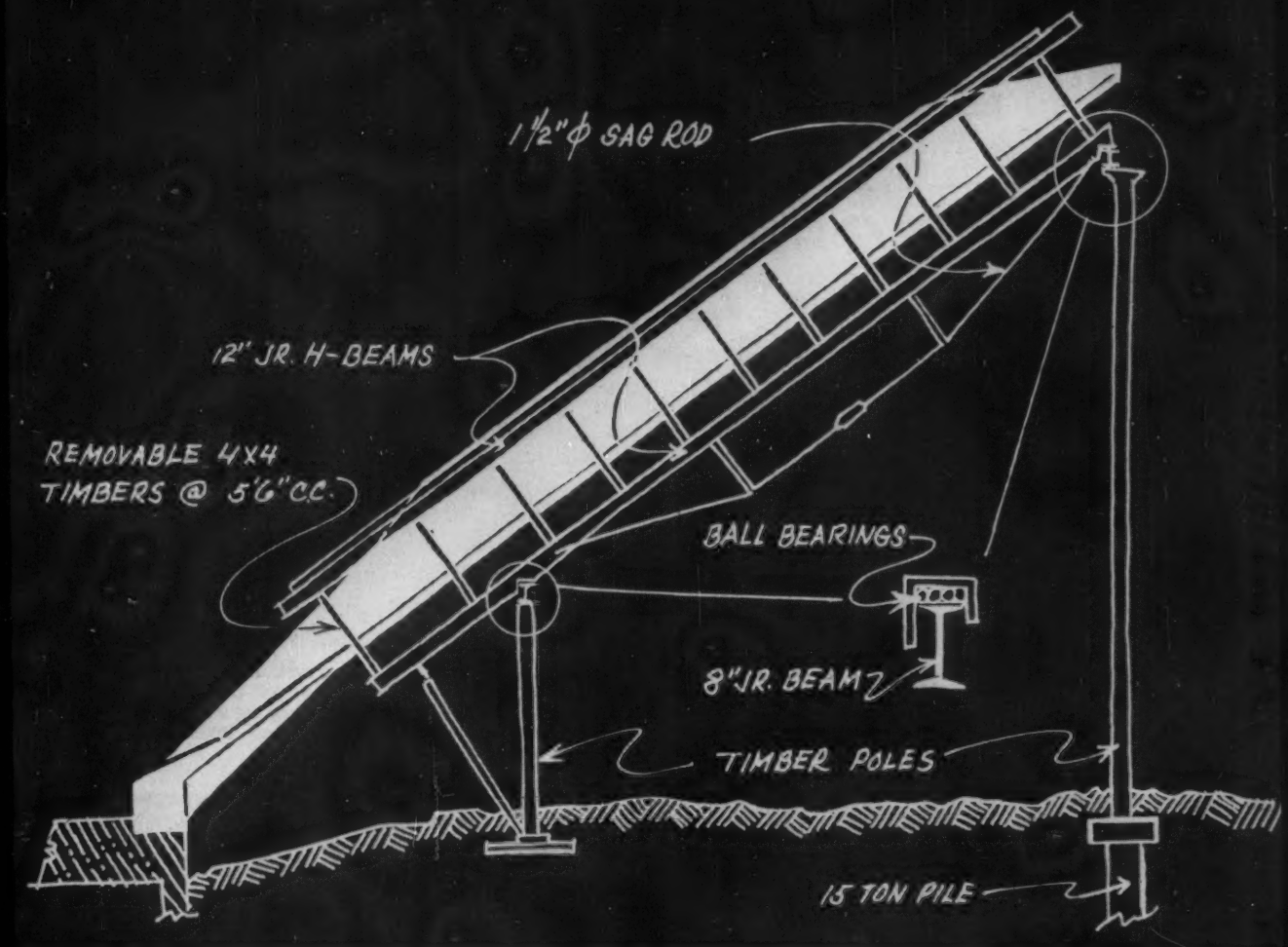
The form for one flange is supported along the outer edge on jacks and removable timbers. Along the valley of the folded plate are bolts that act as hinges and permit the outer edges of the forms to be dropped so they're even with the valley. With the forms, or wings, in a flat position, the entire assembly can be moved sideways from one pour to the next without further disassembly.

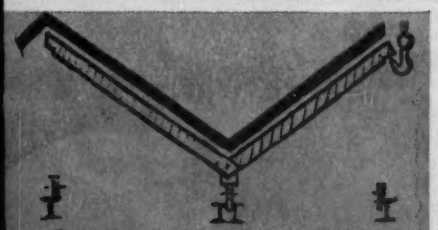
During the moves, the formwork travels on roller bearings that ride on top of H-beams supported by pole timbers. Winches

How Bottom Form Is Prepared for Moving Between Pours

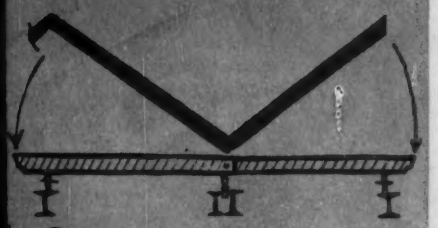


1 Crane hooks onto wide-flange beam at the edge of a form and takes the load off the jacks and timber supports.





2 Jacks are backed off and the timber supports removed; crane then lowers form for each of the plate flanges.



3 In the flat position the forms clear the valley of the fold and they can be moved sideways to the next pour.

SIDE VIEW—Timber poles in center and along sides of structure support the forms. They ride on ball bearings that run on wide-flange beams along the tops of poles.

pull the forms between pours.

Bottom forms consist of a ⅝-in. plywood surface over 4x4 purlins that run parallel to the long dimension of the folded plate. Under the purlins and at right angles to them are 6-in. channels on 5½-ft centers.

Along the outer edge of the form is a 12-in. junior H-beam that supports the ends of the 6-in. channels. The H-beam in turn rests on 4x4 vertical timbers spaced 5½ ft c-c and supported on screw jacks.

Along the valley of the folded plate, the 6-in. channels pivot on bolts in ¾-in. plates that are welded to screw jacks. The three rows of jacks, one for each outer edge and one for the valley, rest on four 12-in. H-beams trussed with 1½-in. sag rods. Each outside row of jacks sits on one of the H-beams, while two H-beams side by side support the jacks under the valley. The beams are oriented parallel to the long dimension of the plates.

Both ends of the beams ride on ball bearings that run on 8-in. junior beams near the peak of the roof and along the edges of the structure. The beams sit on top of pole timbers on 8-ft centers. Along the structure's center, these timbers are 10 in. in dia and rest on 15-ton piles. Wood poles along the edges of the roof are 8 in. in dia, resting on mud sills.

Here's the procedure for moving the bottom form:

A 25-ton Northwest crane hooks onto a strap fastened around the 12-in. junior beam under the edge of the plate and holds the form while workmen let down on the

continued on page 84

"Best rigs for my money—they're doing an excellent job," says R. E. Robertson, superintendent of excavation for Montag-Halvorson-McLaughlin & Associates on the John Day Lock and Dam project near The Dalles, Oregon. He's talking about his seven DW20Gs with Athey PW20 Wagons, carrying 112,000 lb. shot rock or glacial gravel. Five of the DW20Gs stockpiled 100,000 cu. yd. in three weeks. Day after day they make 185 three-mile round trips, pulling big loads at 32 MPH. Says Master Mechanic Huey Long, "These DW20Gs are built to stay on the job."

"These DW20Gs are really hauling sons-o-guns. We've got over 600 hours (in just two months) on them and they're doing great. And this SynchroTouch is undoubtedly the coming thing—only it's here now." This is the way R. A. Heintz describes the five DW20Gs with 482B Scrapers on Heintz & Rogers' railroad relocation project around Ice Harbor Lock and Dam in Walla Walla County, Washington. The tractor-scrapers handle both belt-loading and push-loading tasks. The versatility of these tractor-scrapers has been augmented by sideboarding for easier top loading. Hauling 25 yards of bank run gravel, the DW20Gs move 240 loads every eight hours, cycling in four minutes on the ¾-mile haul.

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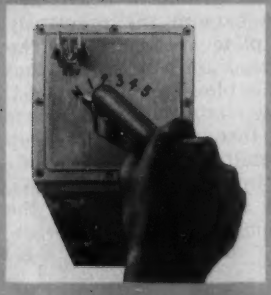

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POWERFUL DW20G FOR PROVED PERFORMANCE ON THE BIG JOBS

CONCRETING—Crane with ½-yd bucket pours concrete for the plates through 16x18-in. holes spaced every 4 ft along the edges of both flanges of the folded plates.

FOLDED PLATES . . .
continued

screw jacks and remove the vertical 4x4 timber supports. The crane then lowers the outer edge of the form. Once the forms for both flanges of a folded plate are lowered and rest on the trussed H-beams, the formwork assembly is ready to be moved to the next pour.

The assembly rides on six roller bearing boxes. The two trussed H-beams under the outer edges of the plates ride on two boxes each, one box at each end of the beam. The two side-by-side beams under the center valley share a large bearing box at each end.

When hand winches have moved a form into a new position, the crane again comes in and lifts the two wings of a form up to the proper slope. Workmen jack the supports into place and adjust the final elevation of the forms. Now they're ready for steel.

Reinforcing is a combination of 4x4—4/4 mesh and No. 11 bars. The mesh is used throughout the plates, while the bars reinforce only the valleys of the folds.

Next come the top forms. V-shaped sections of these are made up of 3/16-in. pressed board with the rough side toward the concrete. Next to the board is ⅝-in. plywood nailed to 2x6 studs on 16-in. centers. At right angles to the studs are 4x6 walers on 2-ft centers. The walers are tied to the studs with Trip-L-Grip framing anchors made by the Timber Engineering Co. of Seattle.

Ten 8-ft-long sections make up the top form for one folded plate. For lifting, the crane hooks onto a ¾-in. I-bolt that is sunk into a 4x6 anchor stud in the center of a form section. The stud is attached to the 2x6's with Trip-L-Grip anchors. The top and bottom forms are tied together with ½-in. rods on 2-ft centers extending through the forms.

Forming takes two carpenters and four laborers five days for a pair of folded plates. Reinforcing is installed in one day.

Concreting starts only after the forms and steel are in place for companion folded plates on both sides of the building. Both plates are poured on the same day, and the pouring proceeds in stages with the crews shifting back and forth from one side of the structure to the other to equalize the loads exerted by the concrete.

First the 25-ton Northwest crane with an 85-ft boom and 25-ft jib and a ½-yd bucket pours a base for each plate. The base is 3 ft 10 in. long, 2 ft 8 in. wide, and 4 ft high. It sits on top of a pile cap over 55-ft poured-in-place Raymond concrete piles. After a base is poured, a plywood cover is placed over it. When both bases are poured, the crane switches back to the first one and begins pouring the plate itself.

Concrete is poured into the forms through 16x18-in. holes spaced every 4 ft along the outer edges of both plate flanges. The crew pours four ½-yd buckets into one hole then switches to the corresponding hole on the other flange and pours four buckets into it. One man vibrates the concrete with a Whiteman 1-hp vibrator equipped with a 1¾-in. head. Four more buckets into each hole complete a lift on one plate, and the crew switches to the other side of the structure and repeats the process. It takes from 7:30 am until 5 pm to complete pouring a pair of plates.

Top forms are stripped on the day of the pour. This operation takes only about 30 min. Bottom forms are stripped after seven days. The 9½-in.-slump concrete is designed for a strength of 3,750 lb at 28 days. It contains pea gravel and 1 lb of Pozzolith retarder per sack of cement.

The folded plates side by side in the structure are rigid enough to stand up without external supports. But the outside flanges of the plates at the ends of a completed portion of the structure tend to sag and flatten out unless fully braced because they do not get any lateral support from an adjacent plate.

Cross braces of 1⅜-in. bars anchored to the reinforcing in the plate are added before concreting to provide additional support to the end flanges. Two 1⅜-in. bars are placed under the reinforcing mesh, one running across the width of each plate flange. A ⅝-in. cable is looped around the bars; the ends of the loop are long enough to remain exposed after concreting.

Just before stripping the bottom forms, an additional 1⅜-in. bar with a turnbuckle is attached to the cable loops. The turnbuckle is tightened and left in place until the next plate is poured. There are four such braces for each folded plate.

When the next pour is completed, the turnbuckle is loosened and the bars in the previously poured plate are removed. The cable loops are burned off, and their holes blown out and patched.

The swimming pool enclosure is one of three units making up a $1¼-million seaside resort financed by the State of Georgia. General superintendent for the Coite Somers Co. is G. E. Ellerbee.

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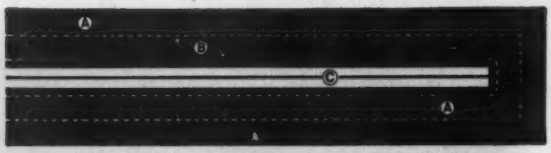


(A)—Rubber or Synthetic Top and Bottom Covers. (Reversible)

(B)—Breaker strips.

(C)—Two Plies of ***Tensilized Nylon** ... Stronger than Five Plies of Heavy-duty Belt Duck.

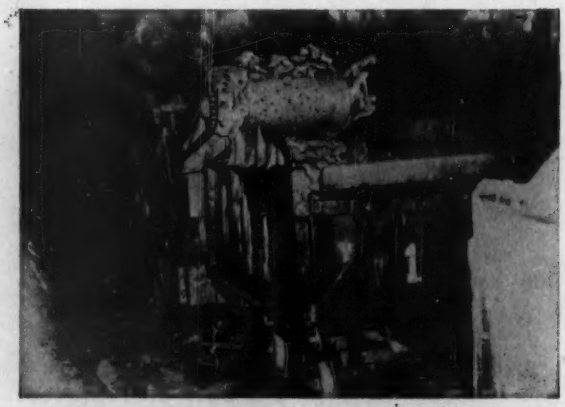
If you are now using the best belting you can buy and still paying a high cost for short belt life, **plus** frequent downtime for repairs, stretch take-up, etc., Goodall ***Tensilized Nylon** Belting is your answer. You will welcome this amazingly **stronger** belting that's guaranteed to cut your belt replacement costs to an unprecedented low.

Here's What This New Belting Means in SAVINGS:

In cases of severe service, where present belt life may now be measured in months, "Long-Life" ***Tensilized** (Oriented) **Nylon** Belts will increase that life, reduce the cost per ton of material carried and eliminate downtime for repairs.

In the toughest of all services—tunnel mucking—"Long-Life" ***Tensilized Nylon** Belting will last two to three times longer without breakdown, handling increased tonnage at a new low cost per cu. yd.

EXAMPLE—A prominent Contractor reports 60,000 cu. yds. of excavated rock handled on a length of Goodall ***Tensilized Nylon** Mucker Belting where only 20,000 to 30,000 cu. yds. could be handled on belts previously used on this tough tunnel job. What's more, there was **no downtime** with the new belt.



. This Revolutionary Advance OR BELT CONSTRUCTION!

"LONG-LIFE" * Tensilized Nylon BELTING

Typical Applications... WHERE LONGER SERVICE MEANS *Big Savings* IN OVER-ALL COSTS:

Construction—Conveying crushed rock in largest sizes. On mucking machines in tunnel excavating, where severest shock and abrasion are encountered.

Quarrying—Conveying crushed rock and stone, trap rock, heavy limestone.

Mining—Handling primary and secondary crushed ores, iron, copper and quartz ores, run-of-mine coal.

Guaranteed TO HAVE GREATER RESISTANCE TO THE FOLLOWING:

Abrasion—Impact—Cutting—Tearing—Internal Rupture—Edgewear—Fastener Pull-out. It will not rot or deteriorate in strength due to moisture penetration. It is built to retain excellent troughing and cover adhesion. Downtime for stretch take-up is practically eliminated.

In building this new belting with a stronger ***Tensilized Nylon** carcass instead of the customary fabric carcass, Goodall offers the only basic improvement in conveyor belt construction in many years. It provides advantages that are virtually impossible with conventional constructions, all adding up to **longer belt life** under the severest load conditions ever encountered in any service. It will out-last the best conveyor belting you have ever used, and eliminate the usual costly downtime for repairs.

***Tensilized** (Oriented) **Nylon**, adapted to the manufacture of Conveyor Belting by Goodall Rubber Company, is produced by Spencer Chemical Co., and processed by Moldings & Extrusions, Inc.

GOODALL RUBBER COMPANY
Whitehead Road, Trenton 4, N. J.
Please send complete information on "Long-Life" Tensilized Nylon Belting for handling

_____

Company_____

Address_____

City_____ Zone_____ State_____

Att. of_____

Contact our nearest branch or mail coupon for complete information. Be sure to state nature of material handled.

GOODALL Rubber Company

General Offices and Factory, Trenton 4, N.J. **Branches Throughout the U.S. and in Canada**

Manufacturers of Mechanical Rubber Goods Since 1870

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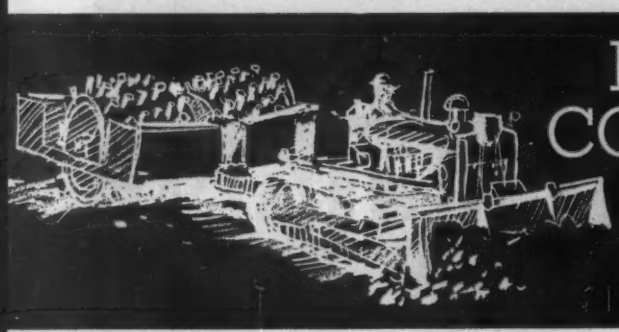


EARTH COMPACTION

HOW TO ACHIEVE BETTER RESULTS AT LESS COST

by M. D. MORRIS

4. COMPACTION METHODS

TO A CONTRACTOR, success in embankment construction means making a fair profit from finishing the job to the satisfaction of the owner on or before the required completion date.

To the owning agency, a successful embankment must be at maximum density, be stable and impervious, and perform its intended function—all at moderate cost.

To the supervising engineer, success in such a venture means arbitrating both sides' desired ends as economically and efficiently as reasonably possible.

Economy without sacrifice of quality is the one basic thing all three parties have in common, and methods are the keys to economy. Even in an ideal situation where the specifications are just right for the contractor, and soil conditions are the best, and the equipment he selected is correct and in top mechanical shape, the job still could be a physical and financial fiasco if he does not use all three basic elements in the most advantageous way.

Knowing what types of soil are to be compacted helps the contractor to determine what piece of equipment he might select to do the job. The accompanying "Quick Soil-Typing Guide" is useful for making rough field checks without any apparatus. But it should not eliminate the standard tests for positive confirmation.

Moisture Control

Regardless of the type of soil, proper control of moisture is vital to compaction success. Too little moisture means there will be insufficient lubrication for the soil particles and, therefore, no maximum density. Too much moisture makes the material unsafe and unworkable. With proper moisture control, light compaction equipment may give results superior to those obtained from much heavier equipment where moisture control is poor.

Optimum moisture content for the fill material is determined in the laboratory. The difference between it and the moisture in the borrow will tell whether the material must be dried or wetted.

If it is to be dried, scarifying or disk harrowing or rotary tilling of the loose lifts on the fill will reduce moisture by aeration.

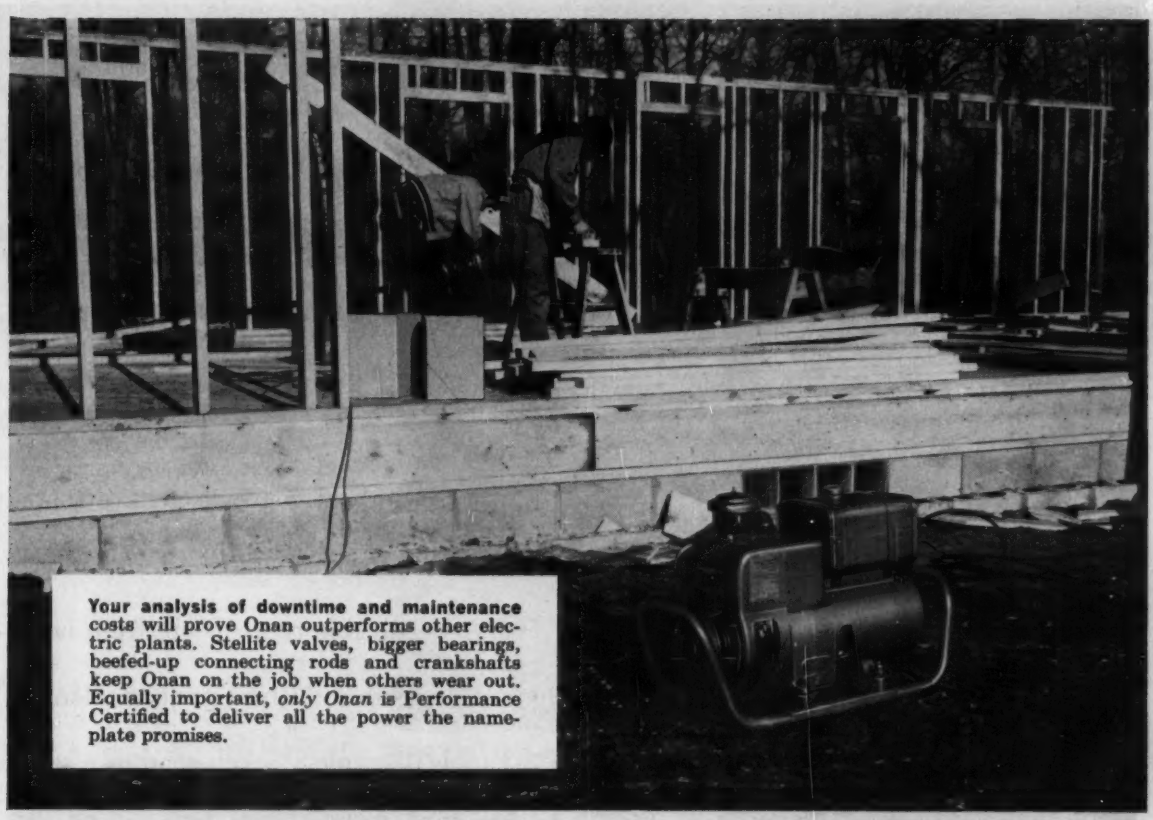
If the material is to be wetted, water can be added either on the fill or at the borrow pit. The amount to add is the difference, in percent by weight, between actual and optimum. This readily can be converted into gallons of water per cubic yard of soil.

At the borrow pit, the necessary water can be added either by sprinkling or by "ponding"—building a series of low earth dikes to make shallow ponds into which water is pumped. In either case, enough time must be allowed before excavation for the water to penetrate and moisten the borrow material uniformly. And usually the material must be over-wetted to compensate for evaporative losses when it is dug, hauled, and spread on the fill.

When water is added to the borrow material after it is placed on the fill, it is usually done with

Quick Soil Typing Guide

WHAT TO LOOK FOR	GRANULAR SOILS, FINE SANDS, SILTS	PLASTIC (COHESIVE) SOILS, CLAYS
Visual appearance and feel.	Coarse grains can be seen. Feels gritty when rubbed between fingers.	Grains cannot be seen by naked eye. Feels smooth and greasy when rubbed between fingers.
Movement of water in the spaces.	When a small quantity is shaken in the palm of the hand, water will appear on the surface of the sample. When shaking is stopped, water gradually disappears.	When a small quantity is shaken in the palm of the hand, it will show no signs of water moving out of the voids.
Plasticity when moist.	Very little or no plasticity.	Plastic and sticky. Can be rolled.
Cohesion in dry state.	Little or no cohesive strength in dry state. Will crumble and slake readily.	Has a high dried strength. Crumbles with difficulty and slakes slowly in water.
Settlement in water.	Will settle out of suspension within an hour.	Will stay in suspension in water for several days unless it flocculates.



Your analysis of downtime and maintenance costs will prove Onan outperforms other electric plants. Stellite valves, bigger bearings, beefed-up connecting rods and crankshafts keep Onan on the job when others wear out. Equally important, *only Onan* is Performance Certified to deliver all the power the nameplate promises.

Only Onan is certified to give you all the power promised by its nameplate

It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that shortchanges you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
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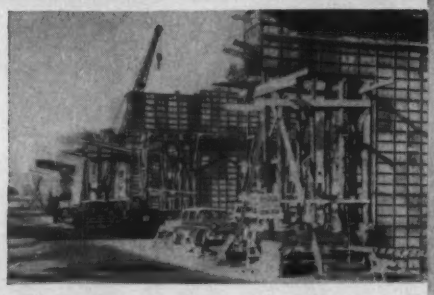

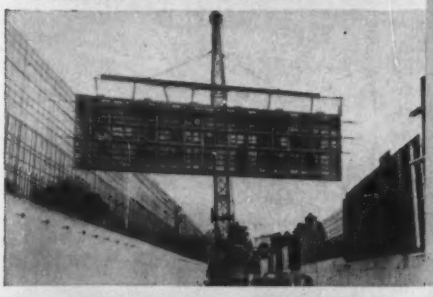

CONCRETE FORMING PROBLEMS

PROFITABLY SOLVED

BY RENTING **UNI-FORM PANELS**

Over the years thousands of contractors have rented UNI-FORM Panels to form concrete and save money on almost every conceivable type of job, from house foundations to mammoth industrial projects. Renting UNI-FORM Panels is simple . . . You send us a set of plans and we will send you a rental proposal based on what you would need. You will get a tailor-made forming system delivered to your job. But the big advantage is that you will be able to use a forming system that will out-perform any other method you might use. Write today for the complete story on UNI-FORM Panels or send us a set of plans; either way we will be glad to hear from you.

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BRANCH OFFICES and WAREHOUSES:

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tank trucks fitted with spray bars. The applied water must be worked into the soil by cultivators or harrows before actual compaction begins. As with any fill where there is a possibility of night rains, at the end of the day the fill surface should be left smooth and slightly sloped to aid run-off, and then be sealed by steel rollers.

Soil Mixing

Mixing soils at the borrow or on the job is closely allied with moisture. It is the key step that makes subsequent operations easy or difficult. Best results come not from soil of any one predominant type, but from good sensible mixtures of two or more classifications of soils if they are readily available. Here the contractor and the engineer can work closely together in a cooperative effort to develop a superior end product.

In a coarse grained sand, for example, fine grain sand should

EFFICIENT COMPACTION — When well graded, at optimum moisture content, and spread evenly in workable lifts, soil compacts well.

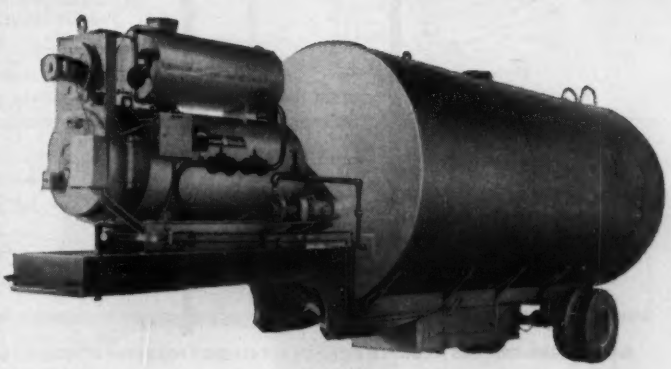
A complete package ready to roll...

Heats and stores asphalt on the job

You can speed bituminous and hot mix operations with the all-new Cleaver-Brooks asphalt storage-heater plant.

Easy to get to the job, the entire unit can be moved without dismantling or re-piping. Just hitch it to your tractor and you're on your way.

Easy to use on the job, it provides low-pressure, high-temperature (up to 450 F) heat with a Peak-Temp *oil* heater that does away with freeze-ups, pressure fittings, water problems and other costly heating problems. Check into this fully automatic, completely dependable method of heating and handling asphalt on the job. Write Cleaver-Brooks, Dept. A, 399 E. Keefe Ave., Milwaukee 12, Wis.



This packaged unit is available with capacities of 10,000, 15,000 and 20,000 gallons. 300-gallon fuel tank for heater. Total weight: 22,500 lbs. with 10,000-gallon tank and CPT-8 Peak-Temp oil heater.

Cleaver Brooks®

ORIGINATOR AND LARGEST PRODUCER OF PACKAGED BOILERS

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be added to improve the density since the smaller grains will distribute themselves among the spaces between the larger grains and thereby reduce the amount of voids. If possible, clay should be added as binder and to make it more workable.

In every clayey material, granular soil should be added to provide internal friction, prevent slides, and make possible a better choice of compaction equipment. Gravel and stones bear up well, but do not compact well, are unstable, and may injure some compacting equipment. In general, plastic materials are more workable but have less bearing capacity, while granular materials lend stability due to internal friction and good strength.

What to mix in what proportions is decided by knowing what combination of soils and water is wanted and then using trial and error for refinements.

AERATION — Disks on grader can help dry soil that is too wet.

If the soils to be mixed appear together in the same borrow pit in different layers, they often can be handled economically by shovel or belt loader. The machines, working against a mixed face, mingle the different materials directly as they dig and load them into the hauling units.

More generally, the different soils will come from separate sources of borrow and must be mixed thoroughly on the fill before compacting. It is poor prac-

continued on page 98

FOR FAST, SAFE, CONCRETE FORMING

***Pick* SURE-GRIP ACCESSORIES**

From one source . . . every accessory you need for accurate, safe and dependable concrete forming. They're made to save time . . . reduce your forming costs.

Dayton Sure-Grip accessories are preferred by leading contractors and engineers. National network of distributors assures prompt service — anywhere!

DAYTON SURE-GRIP HAS A COMPLETE LINE OF ACCESSORIES FOR EVERY CONCRETE FORMING REQUIREMENT

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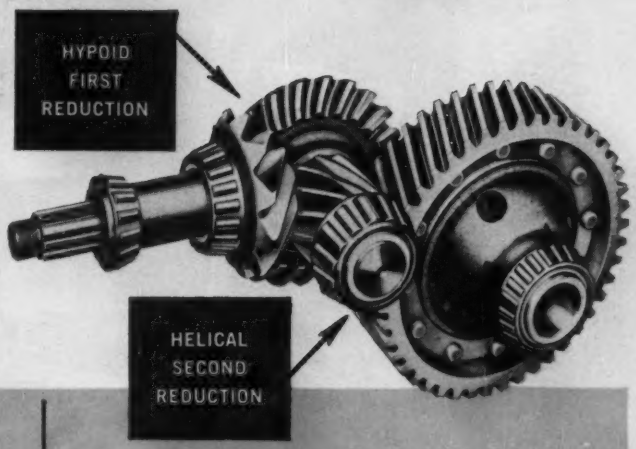
Heavy-Duty Hauling Jobs Are Easy With Timken-Detroit®

BALANCED HYPOID-HELICAL DOUBLE-REDUCTION AXLES

Timken-Detroit balanced hypoid-helical double-reduction gearing is unequalled for top performance and dependability. Outstanding advantages that make it the choice of heavy-duty equipment manufacturers and operators are: big, husky gears . . . greater flexibility in gear ratios . . . balanced gear set loadings . . . long life and low maintenance costs. The hypoid first reduction is 30% stronger than spiral bevel, and works in series with the second reduction to take an equal share of the load. In the helical second reduction, strong helical gears with a wide range of ratios insure balanced double-reduction gearing.



240 SERIES
SINGLE-SPEED, HYPOID-HELICAL DOUBLE-REDUCTION

Two full-sized gear sets form a balanced power train—with each gear set accomplishing a substantial reduction. This combination of husky hypoid first reduction gears coupled with rugged, wide-faced helical second reduction gears provides a double-reduction gear set that outperforms all others. Because the ratios of each reduction may be varied, you get a balanced power train with the larger selection of axle ratios for maximum operational versatility and performance.

340 SERIES
TWO-SPEED, HYPOID-HELICAL DOUBLE-REDUCTION

A true two-speed axle which provides two separate gear ratios through the use of two full-size helical gear sets . . . a "fast" ratio for maximum speeds and a "slow" ratio for greatest pulling power. Pick the most efficient gear ratio to meet your requirements of speed, load and road. Spring-flex power shifting provides simple, positive shifting with either air, vacuum or electric actuation. Timken-Detroit two-speed hypoid-helical double-reduction axles give a versatility and economy to trucking operations that is unmatched by other axle gear designs.

choice of two—

INTERCHANGEABLE BALANCED DOUBLE-REDUCTION DRIVES

Another Product of...

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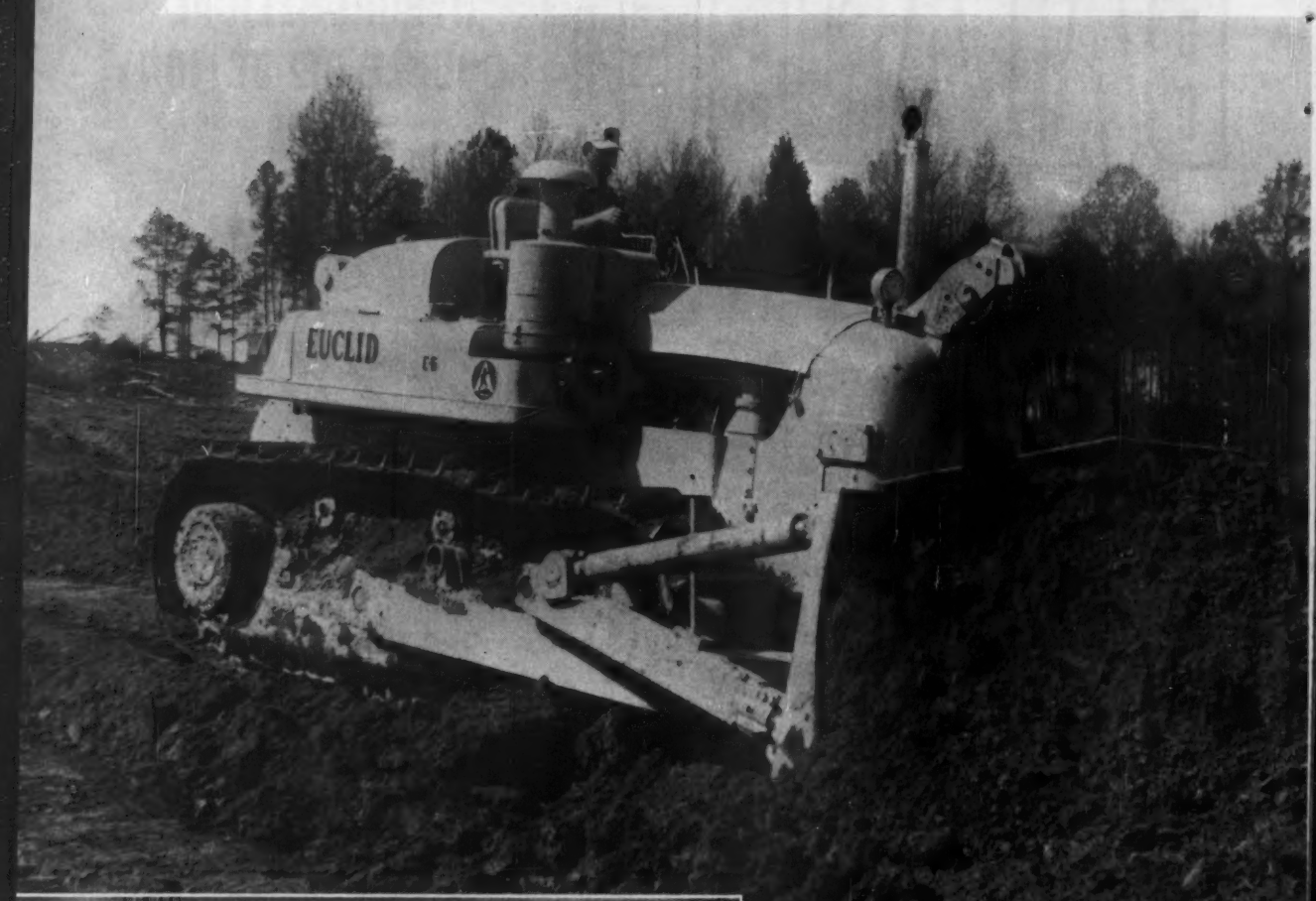
Faster, easier dozing...



Faster dozing because you change speed range or direction with a flick of the wrist —no loss of power or momentum—no gear shift guesswork or clutching delay—save productive time on every cycle.

Full-power shift . . . fast-as-a-fox maneuverability

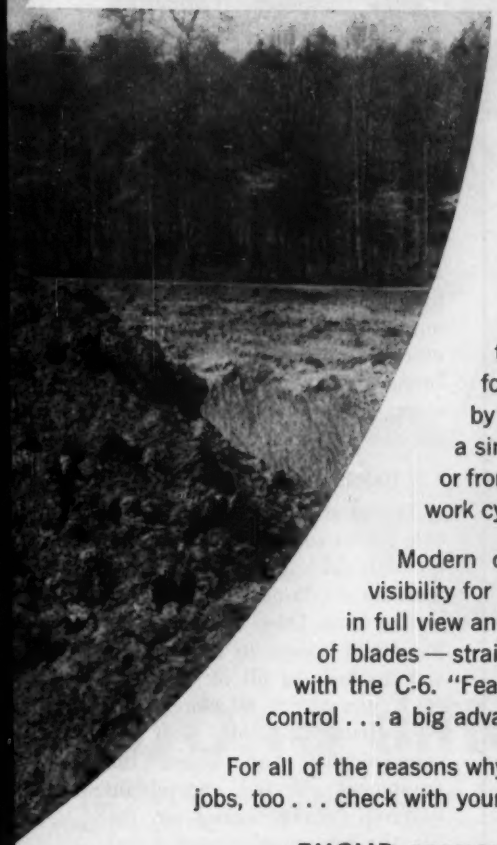
GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

..and overall work-ability

put the "EUC" C-6 in a class by itself!



No matter what your dozing requirements may be—from small grading work for land improvement, plant sites or secondary road construction to the big yardage projects—the new Model C-6 Euclid Crawler offers the best return on your equipment investment.

The C-6 has proved its ability to "doze circles" around other tractors in the 200 h.p. class on job after job. One of the reasons for this outstanding performance is the full-power shift provided by Torqmatic Drive. There's no time lost in clutching and shifting... a simple flick of the wrist changes from one speed range to another, or from forward to reverse and back again. You save seconds on every work cycle . . . keep power matched to the load and job conditions.

Modern design, with rear-mounted radiator, gives the operator better visibility for dozing. The blade is close to the front of the tractor where it is in full view and provides good balance and stability. There is a complete line of blades—straight, angle and "U"—engineered for top dozing performance with the C-6. "Feathered steering" results in smooth turning and positive track control . . . a big advantage on difficult slope work.

For all of the reasons why the C-6 has more work-ability on dozing . . . and other crawler jobs, too . . . check with your Euclid dealer for performance facts and figures.

EUCLID DIVISION OF GENERAL MOTORS • CLEVELAND 17, OHIO

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Good balance with heavy dozer attachments... rear-mounted radiator permits close mounting of straight, angle or "U" blade at front and provides excellent visibility for operator. Quick shift permits "rocking" the tractor to get under big boulders, stumps, etc. Power, speed and fast maneuverability, combined with a rugged undercarriage that stands up under heaviest service, make the C-6 a top performer.

Torqmatic Drive...211 net h.p....easy service accessability

tice to make alternate lifts of the different materials. They should be dumped out and mixed together long and well, generally by harrows.

An hour's time spent in processing is worth 3 to 5 hr of random rolling. Dozing serves to level out and spread the loose material; back-dozing provides a pulverizing effect. Grader blading for evenness of layer thickness is important, for then the compaction equipment can give the entire area the same number of passes to reach uniform density throughout. With difficult, lumpy soil, other equipment often must be brought into play: heavy disk harrows, field cultivators, or rotary tillers.

WETTING – Soil that is too dry is soaked by sprinkler truck.

Lift Heights

The question of deep or shallow lifts leaves something to be said on both sides. Here again, other variable conditions have bearing on the issue. Deep lifts (12 to 24 in.) might appear to be the best way to make a fill of 40 to 70 ft. However, not all compaction equipment can handle such lifts economically. And, unless the equipment selected can obtain uniform density throughout the lift, the top may be crusted and the bottom may remain loose.

If 12 to 24-in. lifts are chosen, the compaction equipment will have to be the 50-ton large-pneumatic-tired type since nothing smaller can handle the job. Sometimes such lifts are dictated by the desire to incorporate chunks of blasted rock in the fill. Then a sheepsfoot roller should work over the material first to break down any sharp edges near the surface that might injure the super-compactor's tires.

NEXT MONTH

The discussion of lifts will continue, and will include rolling speeds and number of passes.

Air-cooled power pays off!

VIBRATING COMPACTOR enables operator to match roller and soil vibrations for full compaction efficiency. Made by Tampo Mfg. Co., San Antonio, Tex., the 3½-ton unit rolls a strip 60 in. wide. Powered by a VG4D Wisconsin.

37-hp WISCONSIN ENGINE

packs 80-ton punch—cuts upkeep!

Are you in a tizzy about engine power? Then let a vibratory compactor help you pick the one that's best for your money — and your job.

Here's why: The above 37-hp VG4D delivers 80 tons of compacting power under terrific shock and impact. Yet it keeps the compactor rolling day-in, day-out.

Like all Wisconsins, the VG4D is precision-built for hard work and long life — to lug through shock loads without stalling. And Stellite exhaust valves and inserts plus positive rotators *make valves last up to five times longer!*

Air-cooling helps, too. It eliminates dry-ups and freeze-ups. There are no radiators, water pumps, fan belts, and other water-cooling parts to buy, service, wear out, and replace — a blessing on construction jobs.

Get the most work out of your equipment — power it with Wisconsin Engines, 3 to 56 hp. Electric starting available for all models. Get Bulletin S-254. Write Dept. C-31.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines C-262

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25-TON MOTO-CRANE

NEW

LOOKS different, IS different

This new Lorain Moto-Crane, model MC-325, incorporates all the proven big Moto-Crane features—plus many new ones. The Lorain MC-325 Moto-Crane is fast getting to the job, fast around the job—and has big crane ability to get the big jobs done fast and efficiently. Fully and simply convertible on the job—from crane to dragline, clamshell, shovel and hoe—it can multiply its usefulness to fit any need.

You will find this versatile machine profitable to buy—profitable to use. See your nearby Lorain shovel-crane distributor for complete information—or write direct for a fact-packed bulletin.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

Some outstanding features of Lorain MC-325 Moto-Crane

Now, for the first time, Lorain's Power-Set® Outriggers are standard on our 25-ton machines. All four outriggers set in about a minute . . . move-ups are even faster.

Full-circle cab visibility. Picture window design with 360° visibility from operator's position. Walk-around accessibility.

Removable counterweight, outrigger boxes and beams for highway weight reduction.

"Shear-Ball" turntable connection provides smoother swings—ends adjustment, maintenance, and lubrication problems. 10-year warranty.

Power-operated back-hitch gantry. Controlled from operator's position for maximum capacities or minimum headroom.

New turntable design, all-welded bed and A-frame of heavy steel plate for true shaft alignment.

Square-Tubular-Chord Boom, lighter weight, stronger, 110′ long. Pin-connected for ease of assembly.

Lorain-built carrier has twist-free, all-welded, box section frame, 15 speeds forward, and a 47-mph highway speed.

LORAIN®
ON THE MOVE

PLANTS in Lorain, Elyria, and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

Radio control keeps everyone on the go by keeping drivers in the know!

What caused your last work stoppage? Could it have been prevented by radioing your foremen and supervisors the exact job condition—letting them send their trucks directly to areas where materials or equipment were needed immediately? How much time and money would you have saved? Take your own work. How much time can radio save you in conferring, checking, planning, and trouble shooting?

Ask a nearby Motorola 2-way radio user. Learn firsthand how you and your foremen can become more productive—saving miles and minutes with each 2-way radio message.

Why Motorola? You get highest dollar value! 1. A custom-planned system engineered to your specific requirements—Motorola assumes complete responsibility for your system. 2. The right equipment—from the world's most complete line of communications tools—Motorola has thousands of installations in every conceivable type of vehicle. 3. Unmatched reliability, proved by the majority of the nation's utilities, police, fire and transportation services—the professional buyers of 2-way radio. 4. Motorola service by factory-trained technicians from nearby maintenance centers—keeps your system at factory peak performance for long-lasting service and satisfaction. These are some of the reasons Motorola outsells all other makes combined!

Call your local Motorola Factory Sales Engineer—or write today to see how 2-way radio can most profitably serve you. For companies with operations abroad—Motorola sales and service are available in 50 countries throughout the world.

MOTOROLA 2-WAY RADIO

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Ill. • A Subsidiary of Motorola Inc.

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Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

Distributor Appointments

Koehring Co.: Western Machinery Co., Inc., of Abilene, Tex., has been appointed distributor in the Texas Panhandle area by the Buffalo-Springfield, C. S. Johnson, and Kwik-Mix Divisions. The Acme Equipment Co. of Toledo, Ohio, has been appointed distributor by the Kwik-Mix Co. The Parsons Division has appointed the following distributors: Critzer Machinery Co. of Berea, Ohio; Flack Equipment Co. of Dayton, Ohio; and the Fincham Equipment Co. of Denver, Colo.

Baldwin-Lima-Hamilton Corp.: Reid-Holcomb Co. of Indianapolis, Ind., and Construction Equipment Co. of Epsom, N. H., have been appointed distributor for Lima Austin-Western crushing screening and washing equipment.

Le Tourneau-Westinghouse Co.: The Finn Machinery Co. of Miami has been appointed distributor for South Florida.

Harnischfeger Corp.: The following distributors have been appointed: Dalworth Machinery Co. of Dallas; Phillippi Equipment Co. of Minneapolis; Atlas Equipment Co. of Salt Lake City; and McCormick-Morgan Equipment Co. of San Francisco.

On the Sales Front

Hyster Co.: The following appointments have been announced: Jack P. Greer, manager of the retail branch in Chicago; William C. Brewer, supervisor of advertising and sales promotion for the Industrial Truck Division; and Jack Cairns, now with the Special Products Engineering Department.

C. W. Onan Co.: The following appointments have been announced: Roy E. Mullin, vice president in charge of marketing; William J. Auger, assistant general sales manager; George R. Burda, manager, sales administration; and David Onan II, manager of market planning and promotion.

Worthington Corp.: Edward F. Buhler has been appointed distribution representative for construction equipment in the territory of West Virginia, Kentucky, Tennessee, Southern Ohio, and Southern Indiana.

In the Main Office

U. S. Steel Corp.: J. Donald Rollings has been appointed president of the American Bridge Division. He formerly was vice president—facility planning and appropriations.

Hercules Powder Co.: The following appointmetns have been announced: Elmer F. Hinner and John M. Martin, vice presidents of the company; Werner C. Brown, general manager, Cellulose Products Department; Jack D. Hayes, general manager, Explosives Department; Paul L. Johnstone, assistant general manager of the Cellulose Products Dapartment; and John R. Ryan, assistant general manager of the Explosives Department.

Associations

Structural Clay Products Institute: The following officers were re-elected at the recent annual meeting: Paul B. Belden, Jr., president; Neill Boldrick, vice president; George Gammie, treasurer; and Joseph J. Cermak, secretary. Chairman of the board and general counsel is Douglas Whitlock.

Special Mention

Hobart Brothers Co.: The Hobart Technical School, in Troy, Ohio, has scheduled five intensive course for early 1961. Each course will be of five days duration. Text and a complete package of reference material will be furnished. The schedule is as follows: Induction Heating for the Welding Industry, Jan. 9-13; Welding Fundamentals for Supervisors and Engineers, Jan. 16-20 and May 8-12; Arc Welding Inspection and Quality Control, Jan. 23-27 and May 15-19; Automatic Welding for Management, March 20-24 and May 22-26; The Gas Shielded Arc Welding Process, April 24-28. For information write Hobart.

. . . the new
BANTAM
compact

BANTAM, the industry leader, steps out again with a new compact-sized rig built on big ideas. BANTAM now offers two sizes: 5-ton capacity, 11-ton capacity.

SEE YOUR BANTAM DISTRIBUTOR

Circle 101 *on Reader Service Card*

WITH A HAMMERBLOW . . . 3 SHARP RAPS CUT WIRE ROPE CLEAN . . . *leave it round, ready for splicing or threading*

Write for name of your nearest stocking distributor

HAMMERBLOW
WIRE ROPE CUTTER CO
19 Profit Ave. • Springfield, N. J. • DRexel 6-4767

Circle 202 *on Reader Service Card*

MACK LVX DUMPERS RIPRAP A RISING RIVER. When complete, Washington State's Rocky Reach Dam will raise a pool in the Columbia River that would have periled the track foundations of the Great Northern Railroad. To prevent this, Goodfellow Bros., Inc., of Wenatchee is using 15 big LVX Mack dumpers to move over a million tons of rock for riprapping and reinforcement of the roadbed.

Mighty Muscles

CAISSON ROLLING—THE MACK WAY. Heavy equipment and material for the dam was handled easily and efficiently by this big tractor-drawn flatbed operated by Rocky Reach Contractors. The 64-ton floating caisson section is being moved into position by a Mack B-73 tractor.

Photo credit to Stone & Webster Engineering Corporation, Rocky Reach project engineers.

MACK
for over 8 straight years
NO. 1
by far in sales of diesel trucks

at Rocky Reach

In the harnessing of a big river, trucks supply the big moving muscles, and the Rocky Reach Hydro-Electric Project being built by Chelan County Public Utility District on the Columbia River at Wenatchee, Wash., is made to order for brawny Macks. Handling the heaviest jobs known to big-league construction, they have hauled everything from riprap to caissons. And everywhere they've worked, they've set the pace for reliability, stamina and economy of operation.

Dumpers, concrete mixers, tractors, flat-bed trucks —there are dependable, economical Macks for every construction job . . . right up to the biggest. Moreover, when you standardize on Macks, you gain the added savings of a completely integrated parts and upkeep operation. Mack controls the quality of every Mack part because it makes more of its own major components—engines, clutches, brakes, transmissions, bogies, cabs, etc.—than any other maker. And every Mack is "Built like a Mack"... made to outlast, outwork, outearn anything else on demanding jobs.

Why not join the swing to Macks—the swing that means maximum hauling efficiency at minimum unit costs. Contact your Mack branch or distributor for full details and specifications. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

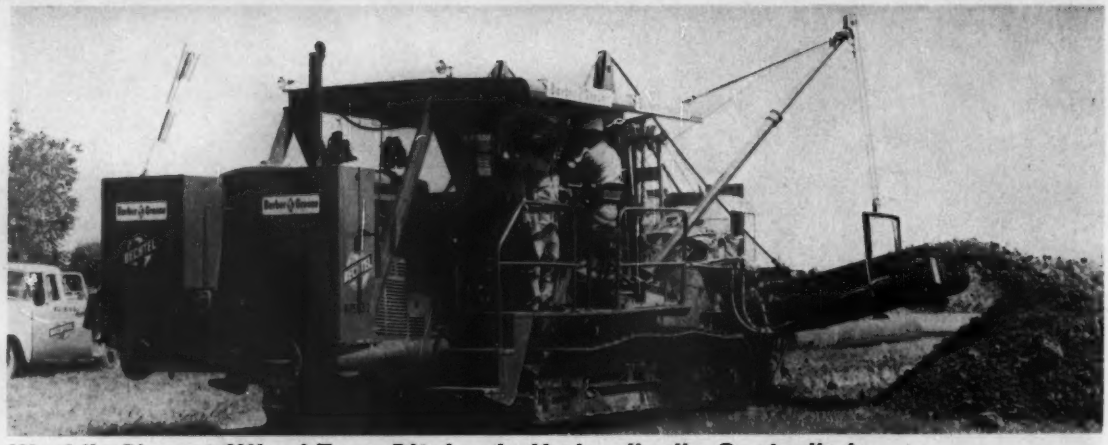
7880

MACK FIRST NAME FOR **TRUCKS**

Circle 103 *on Reader Service Card*

Construction Equipment News . . .

For more information on any item, circle the key number, found at the end of each item, on the READER SERVICE CARD just inside the back cover.



World's Biggest Wheel-Type Ditcher Is Hydraulically Controlled

Crawler-mounted Model 777 ditcher digs a 54-in.-wide trench to a maximum depth of 8½ ft. Where greater width is necessary, slopers can be added to widen the top of the trench to 9 ft. Crawler assemblies are mounted on a special extendable three-point suspension that permits width adjustments for increased stability in rough terrain.

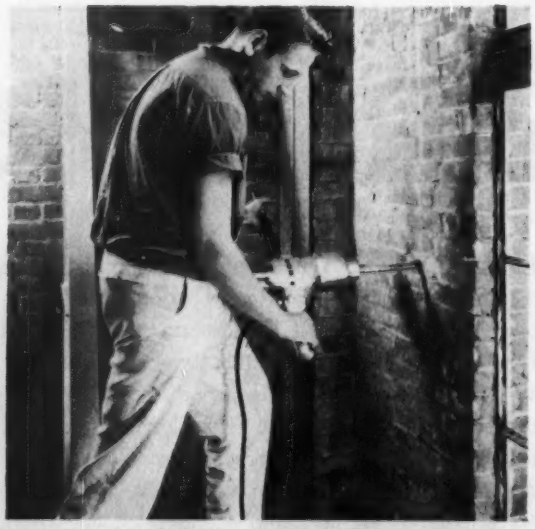
All operating functions are independent of each other and are hydraulically controlled. Hydraulic power drives all of the ditcher's components except the digging wheel which is driven by chains. Crowding speeds are infinitely variable from 0 to 33 fpm, and belt speeds on the spoil conveyor are adjustable to a maximum of 1,000 fpm.—Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

Circle **301** *on Reader Service Card*

Hydraulic Power Operates Attachments

A new Model C Tournatractor with hydraulically operated attachments has just been announced. A direct-drive, 5,000-psi Dynex piston pump powers its operating functions. Power train components are a 218-hp GM 6V-71 engine, a power-shift transmission, and an air-actuated, four-speed torque converter. Top speed is 18.5 mph.—LeTourneau-Westinghouse Co., 2301 N. E. Adams St., Peoria, Ill.

Circle **302** *on Reader Service Card*



Impact Drill Cuts Through Concrete

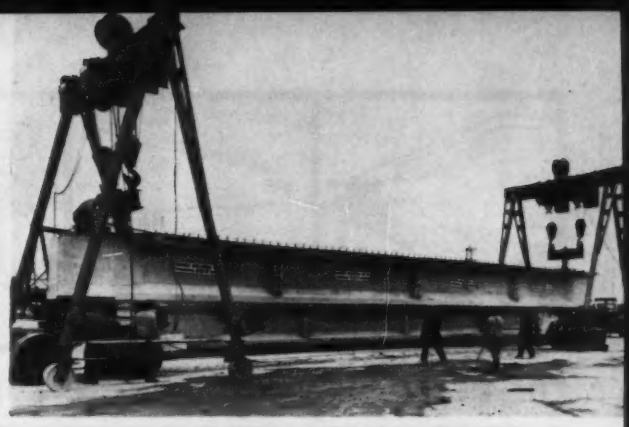
The rotating action of a drill and the impact of a power hammer are combined in one unit in the Stanley No. 404 impact drill. It is electrically powered and cuts holes from 3/16 to 4 in. in dia in concrete, brick, granite, tile, or slate, and it cuts through reinforcing rods. Extension couplings are available for boring holes from 10 to 30 ft deep.—Stanley Electric Tools, 195 Lake St., New Britain, Conn.

Circle **303** *on Reader Service Card*

Portable Gantry Lifts Big Loads

Two A-frame legs riding on fixed wheels or casters, a crossbeam, and a hoisting mechanism make up the Collossus portable gantry, available with clear spans ranging from 9 to 16 ft, headroom from 10 to 20 ft, and capacities to 30 tons. It can be disassembled easily and carried on a truck for unloading materials at the destination. Two men can assemble the 5-ton model in 10 min.—Ontario Equipment, Inc., Route 66 and Grand, McCook, Ill.

Circle 304 on Reader Service Card



Ditcher Rides On Crawler Carrier

Available in either 9 or 12-hp models, the Ditch Witch Series M trencher digs straight trenches with little effort because it is easy to control. The rig is well adapted to digging in frost and in rocky soil. The same crawler under-carriage also is available as a kit for mounting any M-3 Series machine produced in 1959 or 1960. Five bolts attach it to the frame after the axle and bearings are removed.—The Charles Machine Works, Inc., Perry, Okla.

Circle 305 on Reader Service Card

Air Gun Drives Nails Automatically

Nails up to 2½ in. long can be driven with a single blow with a new Powasert nailing gun. The 8-penny gun weighs only 9 lb and drives as many as 120 nails per min when working at top speed.

The gun can be used with a hopper into which nails are dumped from bulk containers. The wheel-mounted hopper acts as a feeder-separator unit that automatically aligns and feeds nails, point first and one at a time, through a flexible 12-ft-long, transparent hose to the gun.

To drive a nail, the operator presses the nose of the tool against the work surface, and the air-driven mechanism inserts the nail. The gun cannot jam, double-feed, permit a nail to pass head first, or fire a nail unless it is pressed against a solid surface.—United Shoe Machinery Corp., Powasert Dept., 140 Federal St., Boston 7, Mass.

Circle 306 on Reader Service Card

Fork Lift Fits Utility Tractors

Maximum lifting height of the Henry TL-4321 fork lift attachment is 21 ft. Lifting capacity to this height is 2,500 lb at a 24-in. load center. Components include a side shifter, overhead safety guard, a load limiter control, and a valve to prevent the load from falling in case of a hydraulic system failure.—Henry Mfg. Co., Inc., Box 521, Topeka, Kan.

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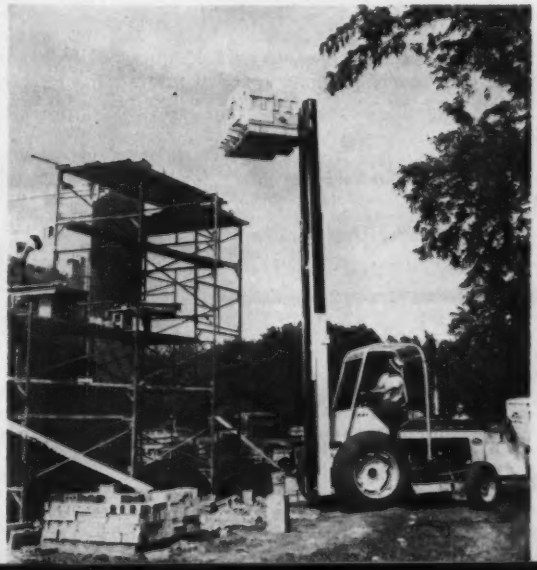
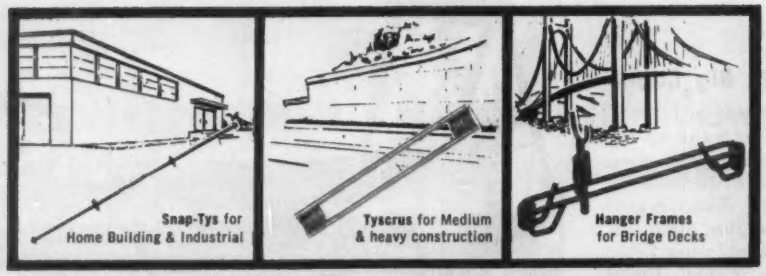
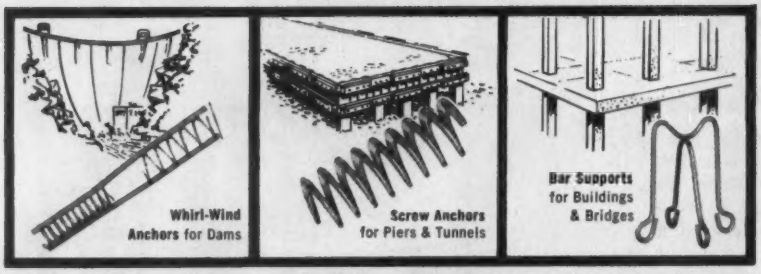
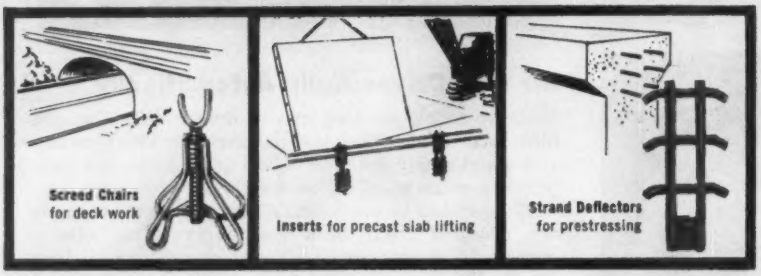




For every kind of concrete construction



there's a dependable Richmond product!



Richmond has learned, through years of practical experience and research, how to design and produce the most effective and economical form ties, anchors, inserts and accessories for every conceivable kind of concrete construction.

All Richmond-engineered products, and there are more than 400 in the complete line; are designed to provide the extra strength that assures a safe, dependable forming job while saving time and money.

In addition, Richmond's field representatives and Technical Department can help you with any problem you might encounter in planning your form work . . . and will provide you with estimates, "take-offs" and material specifications on request.

Richmond's line of laboratory-tested form ties, anchors, inserts and accessories is the largest—in the field. It provides you with one source for all your concrete forming needs . . . ask for, and insist on "Richmond".

For complete information about Richmond's full line of quality products for concrete constuction—or assistance with any specific concreting problem, write to:—

Richmond
SCREW ANCHOR CO., INC.
INSIST ON RICHMOND
. . . AND BE SURE IT'S RICHMOND

Main Office: 816-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.
Plants & Sales Offices: Atlanta, Georgia; Fort Worth, Texas; St. Joseph, Missouri. **In Canada:** ACROW-RICHMOND LTD., Orangeville, Ontario.

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EQUIPMENT NEWS...

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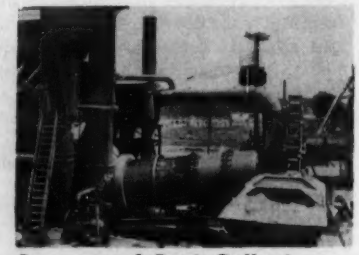

Dryers and Dust Collectors For Asphalt Mixing Plants

Two new rotary aggregate dryers and portable or stationary cyclone-type dust collectors that match dryer sizes have been announced by Barber - Greene. Model DA-55 dryer serves plants with a capacity of 90 to 125 tph, and the DA-65 is designed for plants with 130 to 220-tph capacities. The dryers feature nonclogging rotary inlet chutes, self-adjusting dust seals, a cradle chain drive that eliminates wraparound chains, and a choice of fuel oil or natural gas burners.—Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

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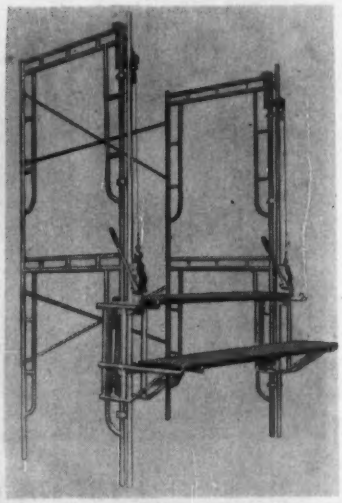


Side Bracket for Scaffolds

Tubular steel scaffolding now can be equipped with a traveling side bracket to enable workers and materials to go up as the work progresses. The bracket includes an aluminum winch with a double ratchet for safety.—Bil-Jax, Inc., Archbold, Ohio.

Circle 309 *on Reader Service Card*

Profit-Preview...

Here's the equipment you'll see on the

MONEY-MAKER JOBS IN 1961

You'll see TOP profits earned on jobs working LW Tandems

Introduced just a year ago, Le-Tourneau-Westinghouse "2-loads-per-trip" Tandems are now being used in every kind of material, and on short hauls as well as long. With good reason: by operating *two* scrapers behind a Tournapull® or Speedpull® prime-mover you *double* your load capacity at *only* ⅓ extra cost for the second scraper. Job use also proves that: you can add or take off the second scraper in *minutes*, to meet changing job conditions . . . you turn, back up, and maneuver as simply as with single scrapers, and in almost the same space. Visibility is *excellent*, of both loads, both aprons, and pusher.

ONE pusher is all you need, and it can be the same size you'd use with ONE scraper-operation! Investigate tandems (18 to 58 yds) . . . LW engineers will help you figure how they will "prove out," and in what tandem combination, on jobs you'll be bidding in 1961.

For more previews of the 1961 profit picture, turn page.....

LE TOURNEAU WESTINGHOUSE LW

1961
Profit-Preview...

You'll see V-POWER TOURNAPULLS®

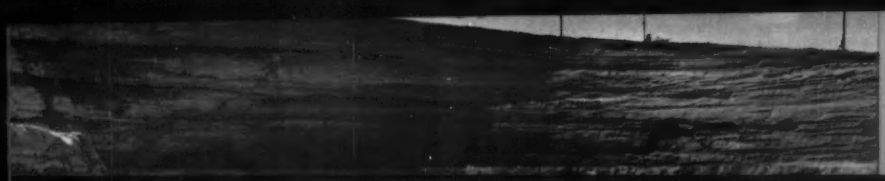
...like this all-purpose C 'Pull* ..."hottest" scraper on the market

V-Power C 'Pull, with 270 hp, 27-mph speed, saves time on *every* phase of its cycles. Main reason: a 20% better power-to-weight ratio than average in its size-class! Other reasons: fast-loading Fullpak® scraper (14 yds struck, 20 yds heaped) . . . smooth-shifting, wide-ranged step-gear transmission . . . instant-response electric steer and scraper control . . . LW Power-transfer differential. Easiest of all earthmoving machines to maintain. Add on second scraper any time for LW Tandem operation . . . or interchange scraper with 22-ton LeTourneau-Westinghouse Rear-Dump.

*Trademark

On long-haul jobs you'll see SPEEDPULLS®...

There's a good reason for C Speedpull's high production on long-haul projects. With 276 hp, it has the best power-to-weight ratio in its size class . . . power for *fast* acceleration . . . power to operate *two* 20-yd Fullpaks in tandem. 37.7 mph speeds. Hydrair® suspension levels the ride, eliminates need for front axle. No troublesome axle "dozing" action. LW Power-transfer differential keeps you moving over rough grades, wet, slippery footing. Positive power-steer for quick turns, easy maneuvering. Result: you move *more* earth at lower cost!



setting new yardage records in 1961

...and the big-production "B", top money-maker of them all!

Best combination of *price, capacity,* and *power* available in big scrapers. GM 12V-71 engine delivers 430 "horses." With extensive use of super-strong but lightweight steel, this gives you a low 320:1 power-to-weight ratio, WAY ahead of the industry. Result: you get more "snap," faster positioning, easier loading, high-ball hauling... *higher production no matter how tough the job.* Powerful enough to operate TWO 29-yd scrapers in tandem; low-cost enough to prove-out dollar-wise with *any* combination of 20 or 29-yd scrapers, or with interchangeable 35-ton Rear-Dump.

...and on any job, economy-size D 'PULLS

The 143-hp D 'Pull, with 9-yd scraper or 10-yd Hancock elevating scraper (shown), is probably the most useful earthmover built. On *big* yardage contracts, you'll see the "D" on finish, shoulder, and clean-up jobs. On *small*-yardage work, it can be roaded without permit, work by itself. With Hancock scraper, you do *not need* a pusher to get heaped loads. Scrapers interchange with 11-ton Rear-Dump.

For more profit-previews, turn page...

1961 Profit-Preview, continued...

On every size and type of job you'll see...

"Go-Anywhere" LW Tournatractor® ...with 218 hp, 18.5-mph speed

Rolling on big rubber tires, mobile Tournatractor is on the job, *producing*, before you can load a crawler tractor on a low-boy! It *works* fast, too, with non-friction drive for acceleration pep, with sharp-turn maneuverability, and a torque-converter transmission speeding *every* operation. Power? In speed ranges where most tractor work is done, it matches big crawlers in rimpull, pound for pound. New: *choice* of Tournatractors, with electric or hydraulic blade control.

"Go-Power" LW Graders...7 sizes from 85 to 190 horsepower

More proven performance-advantages than any other grader on the market! Strongest frame built, with high arch for more blade clearance... 63" circle and *positive* blade control... 8 forward speeds, 4 reverse, 3 optional creepers for maximum power application (two torque-converter POWER-*Flow*® models offer *infinite* speed ranges)... GM or Cummins engines... full-sweep visibility of both blade-ends and road ahead... and a *wide* range of profit-boosting attachments, including Preco automatic blade control.

HAULPAK®: the truck you can tell is built by a construction-equipment manufacturer

Designed to *earthmoving* "specs," not automotive! You get: LW Power-transfer differential... traditional Tournapull ruggedness in frame, axles, bull-gears, etc. *New* ideas, too: "no-spring" Hydrair® suspension ... deep V-bowl that carries *more* load *lower* for best stability... built of steel 3 times stronger than standard, yet ⅓ lighter. You haul much more payload than Haulpak weighs! 5 sizes, 22 to 60 tons, for *lowest net cost per hauled ton* on every job.

LeTOURNEAU-WESTINGHOUSE COMPANY • PEORIA, ILL.

Litho in U.S.A. P-2400-DC-4

BUTLER TX-4 SMASHES TWO WORLD'S RECORDS

AUGUST 11

August 11 — Highway 31 near Mackinaw City, Michigan, Denton Construction Co. laid 7250 lineal feet of 24 ft. pavement 9 inches thick, in 12 hours, with a 4 bin BUTLER TX-4 Roadbuilders Plant. Each bin equipped with 4 batchers to feed 4 pavers.

AUGUST 25

August 25 — Same highway — same BUTLER TX-4 plant; same number of pavers: Denton laid 8036 lineal feet! Both these paving performances broke Denton's own 1958 record of 6029 feet of 24 ft. pavement, 9 inches thick. The August 25 demonstration of batching genius stands unapproached.

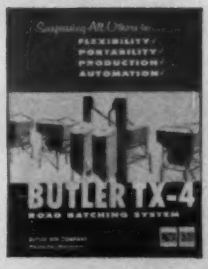
Does anyone want to try? Then get yourself a BUTLER TX-4. That, of course, is the primary and essential requisite.

HERE ARE INTERESTING HIGHLIGHTS

In the August 25 record each batch contained 728 lbs. of cement, 1856 lbs. sand, 1532 lbs. fine stone and 1512 lbs. of coarse. In 12 hours Denton used 7,548 bbls. of cement — equivalent to 19 railroad cars. And the BUTLER TX-4 plant handled 3898 separate batches on that historical day!

BUTLER BIN COMPANY

949 Blackstone Avenue
Waukesha, Wisconsin



Send for new, detailed, profusely illustrated Bulletin on the BUTLER TX-4 Road Builders Plant. Just a postcard will do — but write today.

◀ *Circle* 110 *on Reader Service Card*

▲ *Circle* 111 *on Reader Service Card*

EFFECTIVE WATER CONTROL

Dewatering measures are only as effective as the engineers who apply them. That's why Stang engineers are dewatering specialists, seasoned engineers that have made the proper application of dewatering methods their profession. This difficult job on the Ohio River is an example of how the professional Stang touch pays off. Here a combination of wellpoints, wells, and sump pumps are coordinated to properly dewater the entire working area. Call Stang—there can be a qualified engineer on your jobsite tomorrow.

JOHN W. **STANG** CORPORATION

8221 ATLANTIC AVE., BELL, CALIFORNIA

ENGINEERS & MANUFACTURERS OF DEWATERING EQUIPMENT, WELLPOINTS & PUMPING SYSTEMS · DEWATERING — PLANNING — EQUIPMENT — SERVICE

OMAHA TACOMA MOBILE TULSA MINNEAPOLIS ST. PETERSBURG

EQUIPMENT NEWS...

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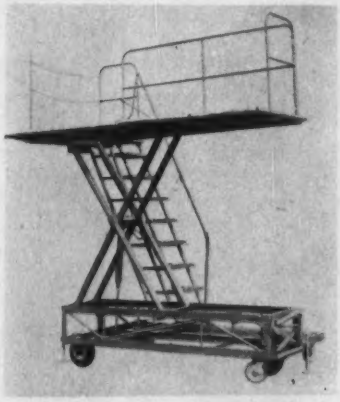

Elevating Platform

Hydraulic power raises the platform of a mobile work stand to a height of 100 in. above the floor. When lowered, the unit is only 30 in. high. A folding catwalk on the side of the platform can be raised to increase the work area. With the catwalk up, the work platform measures 56x126 in.—Bil-Jax, Inc., Archbold, Ohio.

Circle 310 *on Reader Service Card*

Welder-Power Plant

At a 100% duty cycle, the Hobart GW - 2235 - S combination dc welder and ac power plant provides 200 amp dc at 25 v for straight or reverse polarity welding. For intermittent use, the welding range is 30 to 325 amp. The unit produces 2 kw of 110-v ac auxiliary power while welding or 5 kw of 110/220-v ac current when working as a generating plant. A 14.2-hp, 2-cyl, air-cooled Wisconsin engine powers the plant.—Hobart Brothers Co., Hobart Square, Troy, Ohio.

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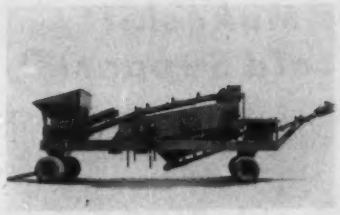

Portable Screening Plant

Pioneer Model 522-E plant incorporates a two-deck screen with spouting that allows material retained on the two decks to be combined or discharged separately. The top deck measures 5x14 ft. Other equipment includes a mechanical feeder, 30-in. feed conveyor, 30-in. end delivery conveyor, and 24-in. side delivery conveyor.

Electric, gasoline, or diesel power is available. The chassis can be mounted on a single axle in front and rear or it can be equipped with a fifth wheel pin at either end.—Pioneer Engineering Div., Poor & Co., Inc., 3200 Como, Minneapolis 14, Minn.

Circle 312 *on Reader Service Card*

TRANSPORT TRAILERS DELIVER

THE QUALITY LINE OF DEPENDABLE TRAILERS FOR EVERY HAULING NEED!

MODEL XTT

Tandem axle tilt trailer (tow type), capacities 13 through 20 tons.

MODEL PTX

Heavy-duty tandem axle with adjustable bolsters. Telescopes from 16' to 30' from tractor.

MODEL PX

Heavy-duty tandem axle, spring mounted platform or float.

MODEL GPX

Tandem axle. Capacities 16 through 35 tons. Drop deck or flat deck.

MODEL KS-F

Single axle flat bed semi, capacities 10 through 20 tons. Drop deck or flat deck.

MODEL GXTT

Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

MODEL MSO-D

Multiple axle drop bed semi, capacities 35 through 75 tons. Drop deck or flat deck.

MODEL T-8-18

14 or 18 foot length between the wheel tilt trailer. 8-10 ton capacity.

MODEL GTX

Triple axle, 6 dual wheels. Capacities 25 through 45 tons. Flat or drop deck.

MODEL KSO-D

Dual axle drop bed semi, capacities 15 through 30 tons. Drop deck or flat deck.

MODEL GPR

Removable gooseneck. Tandem, triple or trunnion axles. Flat or drop decks, or as beam trailers.

MODEL TT

Heavy-duty tilt trailer. Capacities 6, 8 and 10 tons.

MODEL PX-O

Heavy-duty, self-loading tandem axle oil field float.

"Transportation Engineering A Specialty"

TRANSPORT TT TRAILERS INC

CEDAR RAPIDS IOWA, U.S.A.

EXPORT OFFICE: AMROCTA COMPANY
50 Church St., New York 7, N.Y.

Send Today FREE!

NEW catalog showing COMPLETE line for your transportation needs.

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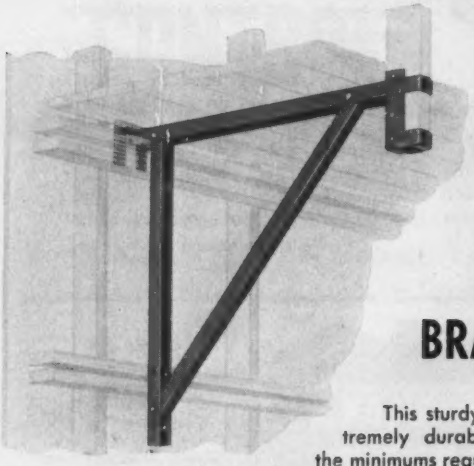
Eliminate Dangerous Makeshift Scaffold Supports!



with THIS NEW SCAFFOLD BRACKET (JACK)

This sturdy steel Scaffold Bracket is extremely durable, being far stronger than the minimums required by State Building Codes.

The bracket may be quickly adjusted for connecting to either 2 x 4 or 2 x 6 wales, or flush with the concrete face. (Illustration shows the 2 x 4 position.)

One of the many advantages is the *fold-down* feature which saves considerable space in storing and shipping. Why not stop using hazardous makeshift scaffold supports and specify Superior's Scaffold Brackets—made of steel—virtually indestructible. May be rented as well as purchased outright. *Write for Bulletin OF3.* **Superior Concrete Accessories, Inc., 9301 King St., Franklin Park, Illinois**

Circle 114 *on Reader Service Card*

place 10 cubic yards of concrete per hour with TRUE GUN-ALL MODEL G-4A

The True Gun-All Model G-4A is a contractor's workhorse that shoots REAL concrete containing up to ¾" aggregate. It saves time and money by giving you higher production, letting you shoot a more economical mix and by eliminating costly double forming. The True Gun-All thoroughly and accurately mixes the concete in its self-contained chambers, doing away with guesswork by the nozzleman. This premixing reduces slump, rebound and dusting. The G-4A does its work with only a 365 cfm compressor. (Smaller models available)

BEST FOR GUNNING, CONVEYING OR GROUTING . . .

You can batch on the job or use a wet or dry transit mix . . .

Write for complete information Catalog No. GA30

TRUE GUN-ALL

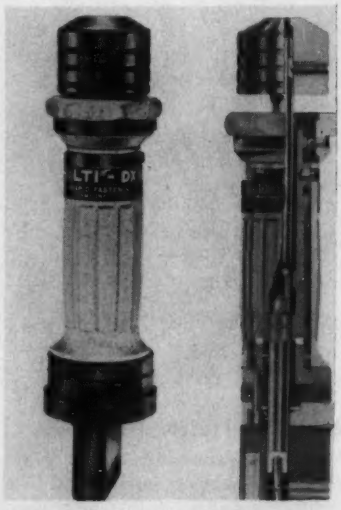
a division of DETROIT TOOL ENGINEERING CO.

P. O. Box 232 Lebanon, Missouri

Circle 203 *on Reader Service Card*

EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Power Fastening Tool Is Safe to Operate

Instead of shooting a fastener into dense materials, the Hilti DX 100-L tool starts the fastener in contact with the material and "pushes" it in. A steel piston containing a slow-burning charge is in contact with the fastener and drives it into the material when hit by a hammer. All fasteners have a washer to prevent over-penetration. Maximum size fastener the tool can handle is a ¼ in.-20 stud. The tool is guaranteed to eliminate the hazards of ricochet, fishhooking, and explosive spall, and it is approved for safety by unions and state industrial commissions. — Hilti, Inc., 73 Southfield Ave., Stamford, Conn.

Circle 313 *on Reader Service Card*

Electric Retarder

A battery operated device for trucks and trailers can be installed on the drive shaft for slowing a vehicle without the use of brakes. The vehicle's own energy retards its motion. The electrical braking device, or retarder, was developed in France and is available here for trucks with a maximum capacity of 35 tons. The retarder is geared to the rear wheels and is controlled by a lever mounted on the steering column.—Lear Electro-Mechanical Div., 110 Ionia Ave., N.W., Grand Rapids 2, Mich.

Circle 314 *on Reader Service Card*

Dig up to 800 feet of trench an hour—6 to 12 inches wide, as deep as 6 feet—with International 340 and ladder-type trencher.

For toughest digging, as deep as 13¼ feet, team the International 460 with heavy-duty No. 95 backhoe.

For general purpose trenching to 10-foot depth the International 340 tractor and No. 65 backhoe offer outstanding value.

Fast, clean, low-cost trenching!

with International tractor stamina and economy

High capacity and on-the-job dependability are the true measures of low-cost digging and trenching. You get them *both* in the highest degree with International® 340 and 460 Industrial tractors. These rugged Internationals have the built-in strength and balance to let the operator crowd the backhoe bucket for full loads . . . even in the toughest kind of digging . . . and the *stamina* to stand up in heavy-duty service long after more lightly built units have "had it."

Keep costs down—match tractor size to your range of jobs. The husky International 340 is a four-cylinder tractor—gasoline or Diesel—for 10 or 12½-foot backhoes and 1,600-pound loader capacity. The mighty International 460 is powered by six-cylinder, Multi-Range gasoline or Diesel engine. It has the power and weight balance for 12½ or 13¼-foot backhoes—lifts up to 2,500 pounds with front end loader.

The IH Dealer near you will be glad to give you full information—demonstrate if you wish. See for yourself the quality of construction . . . the convenience of operation . . . that put International 340 and 460 tractors in a class by themselves for high-production digging and trenching.

INTERNATIONAL HARVESTER

the **SWENCH®**

LOOSENS TOUGH NUTS
THAT EVEN POWER
TOOLS CAN'T BUDGE

WHEEL LUGS on buses and trucks usually require the "beef" and skinned knuckles of two men to loosen. SWENCH does the job faster at less cost.

FROZEN HEX NUT on this molding machine caused 36 hours down time when removed by ordinary methods. Just 7 SWENCH impacts moved this tough baby.

RAILROAD HOPPER DOORS easily rust shut. Often it takes a 4-man crew a full day to loosen them. One man and a SWENCH does the job in just 7 or 8 impacts.

Discard that old-fashioned sledge. Put your torch away. Think before you buy another power wrench. Here's a *manual* wrench that delivers more effective torque than any other tool its size.

HOW?

Power wrenches deliver their torque as many tap-like blows. Ordinary hand wrenches apply a steady torque. Swench, on the other hand, builds up power in its super-strong spring for a mighty wallop, which is released as torsional impact every time the handle is advanced slightly more than 30 degrees. Swench multiplies torque applied to the handle more than 15 times.

Now one man can "Swench off"—in minutes—nuts that used to take a full crew a working day to burn or sledge off.

Swench is completely portable. No power connections needed. No auxiliary equipment to man and maintain. You save on man-hours. You save on maintenance. You save on initial cost. (Swench costs *much less* than a power impact wrench.)

You don't believe it? One demonstration will convince you. Line up your toughest job and give your Industrial Distributor a call. If Swench can't do it, no tool can.

Don't wrench it—SWENCH IT!

CURTISS WRIGHT

MARQUETTE DIVISION

1142 Galewood Drive, Cleveland 10, Ohio

Circle 116 *on Reader Service Card*

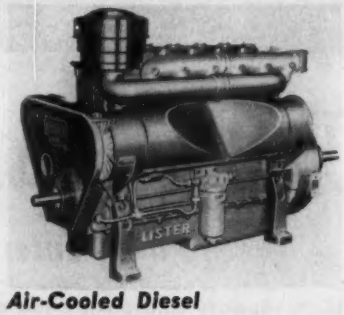
EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Corrugated Body Cuts Truck's Weight

More rigidity and lighter weight are features of the new KW-Dart Model 35SL trucks. Corrugated construction reduces the weight by 4,000 lb, at the same time strengthening the body. Capacity of the new units is 37 tons. They're powered by a 450-hp diesel engine and equipped with a three-speed transmisison and a three-stage torque converter with a downhill braking feature.—KW-Dart Truck Co., Kansas City 41, Mo.

Circle 315 *on Reader Service Card*

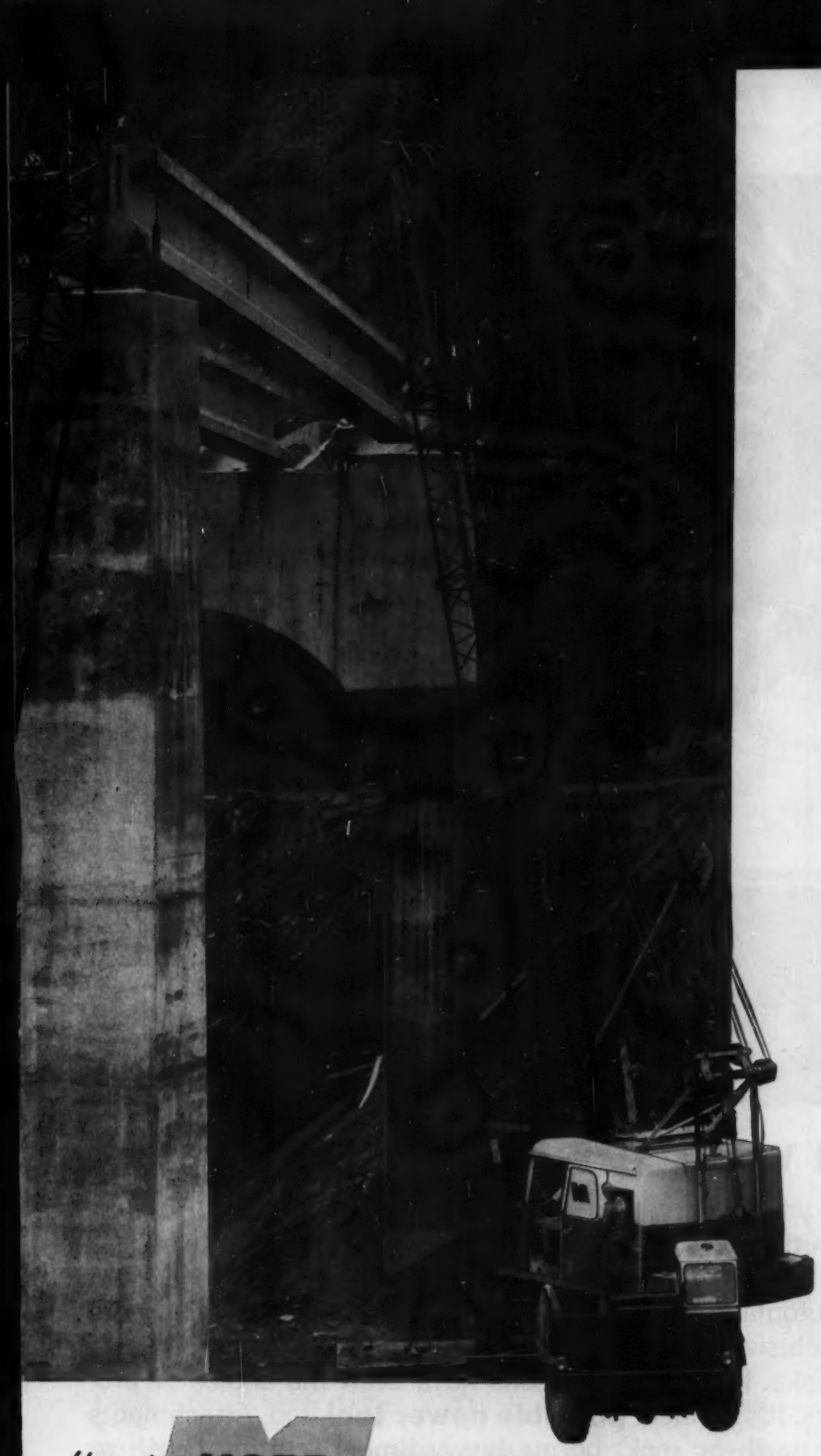


Air-Cooled Diesel

Expansion of the line of Lister air-cooled diesel engines has been announced with the addition of the Model HAB6. It develops 72 hp at 2,000 rpm and is cooled by two single-stage, axial-flow blowers coupled in tandem and belt driven from the engine.

The fuel system includes a lift pump delivering through a filter and multi-element fuel pump delivering to the ejectors. A centrifugal governor is standard equipment. Provision for clutch pto or close coupling is available with SAE No. 2 flywheel housing.—Lister-Blackstone, Inc., 42-32 21st St., Long Island City 1, N.Y.

Circle 316 *on Reader Service Card*



BENT MOUNTAIN BRIDGE WORK

Famed Skyline Drive in Virginia is getting a new look these days as a 40-ton, 43-M truck crane helps erect spans for an overpass situated 1900 ft. up the side of Bent Mountain near Roanoke. Using positive-acting Marionair control, these 35-ton prestressed beams are quickly hoisted in place with pinpoint accuracy.

Because of the steep switchbacks and narrow, short turns, the trucks which hauled the concrete beams had to be lifted around some of the curves. The Marion handled the job easily... without outriggers.

More proof that Marion cranes are the machines for you? Your nearest Marion distributor has it.

You get **MORE** *with* **MARION**

Marion Power Shovel Company, Marion, Ohio

A Division of Universal Marion Corporation

Circle 117 on Reader Service Card

What do you want to cut besides costs?

Name your problem. Are you clearing land... cutting lightweight beams... leveling piling? If it's a wood-cutting job, there's a **McCulloch Chain Saw** to handle it fast! McCulloch saws start easily in any weather, cut at full power overhead or sideways. For safety, automatic clutch stops chain when idling. Operating costs are low. McCulloch's exclusive New Super Pintail® Chain stays sharper, lasts longer than any other make. Rugged McCullochs have been the choice of professional loggers for years. It's an ideal **portable power tool,** too. Attachments are available for drilling earth or rock, boring heavy timber, cutting brush or wildgrass. The world's **Number One** saw in sales, quality, dependability and dealer network service. Seven professional models starting at **$149.95** with full 16″ bar. A card to McCulloch Corporation, 6101 W. Century Blvd., Dept. CM-3. Los Angeles 45, Calif., will bring full information.

■ McCulloch Corporation, Los Angeles ■ Marine Products Division (Scott Outboards), Minneapolis
■ McCulloch of Canada, Ltd., Toronto ■ McCulloch International Inc., Los Angeles

LEADERSHIP THROUGH CREATIVE ENGINEERING

9-0804

Circle 118 on Reader Service Card

EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

New Line of Truck Mixers

Sizes of BuKaneer transit mixers range from 4 to 10 yd and are available with flywheel pto, front engine pto, or a separate engine. All drives provide four forward and four reverse speeds. Air-electric mixer controls are located at both ends of the drum, and a tachometer for indicating the drum speed is standard on all models. Other equipment includes a 150-gal water tank with sight glass and measuring gage and a discharge chute consisting of one 3-ft and two 5-ft sections.—Blaw-Knox Co., Construction Equipment Div., Mattoon, Ill.

Circle 317 *on Reader Service Card*

Loader-Tractor-Backhoe Is Built as Integral Unit

The Dynahoe is a wheel-mounted tractor with a ⅞-yd loader bucket in front and a 7½-cu ft backhoe in the rear. The attachments and the tractor are designed as an integral unit. Other features include a power shift transmission, torque converter, power steering, and a single operator's seat that swivels to face the direction of the work. — The Hy-Dynamic Co., Lake Bluff, Ill.

Circle 318 *on Reader Service Card*

Spreader Trains

Bottom-dump haulers for spreading aggregates or road base materials are available in two models. Both are identical in design except that the hopper of one is made of aluminum alloy while the other utilizes high-tensile-strength steel. Two-axle tractors pull the spreaders.

Maximum legal payload is 28 tons, and the spreading width is 8 ft. A two-way gate, operated from the truck cab, controls the depth of the materials. The gate can be adjusted while the units are in motion.—Challenge-Cook Bros. Inc., 3334 San Fernando Rd., Los Angeles 65, Calif.

Circle 319 *on Reader Service Card*

Radius Rods for Trucks

Designed to carry driving and braking forces directly to the frame while the springs carry only the load, these Truckstell radius rods save both center-bolt and spring leaves from damage. According to the manufacturer, the rods never need adjustment. Complete package sets are available for all medium and heavy trucks, and the rods can be installed without removing rear springs or U-bolts.—Truckstell Mfg. Co., 3490 W. 140th St., Cleveland 11, Ohio.

Circle 320 *on Reader Service Card*

Silicon Rectifier Welder

The A. O. Smith ac/dc silicon rectifier welding machine is rated at 500 amp, 100% duty cycle. It is designed to replace 600-amp motor-generator sets on semi-automatic submerged arc welding applications. The welder's ac section can be used with heavy iron powder electrodes, while the dc side handles submerged arc applications.—A. O. Smith Corp., Welding Products Div., Milwaukee, Wis.

Circle 321 *on Reader Service Card*

BANTAM introduces the compact (Series 250) to the construction industry Meet this new addition to the BANTAM family—a compact 5-ton-capacity rig . . . leads the way to new economies.

COMING SOON
SEE YOUR BANTAM DISTRIBUTOR

Circle 119 *on Reader Service Card*

EFCO FLEXIBLE Form Panels

Round concrete tanks or curved walls may be quickly formed by combining EFCO Flexible Steel Form Panels with regular EFCO Steel Forms.

For angles of any degree, EFCO Flexible Angle Form Panels make the job easy.

ASK FOR COMPLETE INFORMATION

EFCO ECONOMY FORMS

MAIL TODAY

ECONOMY FORMS CORP.
Box 128-N, H.P. Station
Des Moines, Iowa

Please send catalog showing EFCO Flexible and Regular Form Panels, and address of nearest sales office.

Name.....
Firm Name.....
Address.....
City..... State.....

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it's a
TURN FOR THE BETTER

Full Time
Sheppard
POWER STEERING
Trouble Free

NOW...POWER STEERING FOR YOUR CATERPILLAR 12 AND 112 GRADERS

A Complete System Engineered for Easy, Fast Installation. Heavy-duty, full-time power steering puts operator in complete control of grader at all times . . . boosts work output. Simplified design . . . only *4* moving parts . . . assures quick, easy installation and maintenance-free performance.

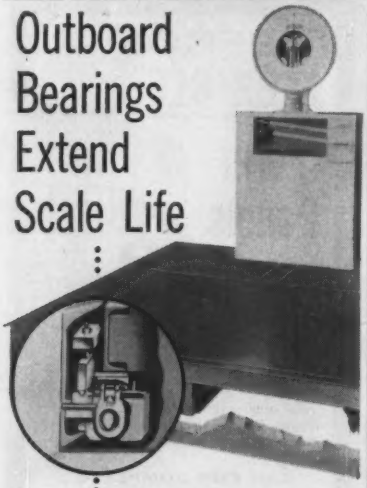
Get Full Facts from your CATERPILLAR Distributor or write:

R. H. SHEPPARD CO., INC. • HANOVER, PA.

Sheppard Power Steering is original equipment on many models of Brockway and Mack Trucks, Koehring Dumpsters, Allis-Chalmers Graders, Huber Warco Maintainers, Champion Graders by Dominion Machinery, Fire Engines by American La France, Schield-Bantam Cranes and many others.

Circle 120 *on Reader Service Card*

Outboard Bearings Extend Scale Life



Only DETECTO gives you OUTBOARD BEARINGS!

Write for information on full line of industrial weighing equipment from 1/100 oz. to 100 ton:

Detecto Scales, Inc., Dept. Y-3
540 Park Ave., Brooklyn 5, N.Y.

Circle 205 *on Reader Service Card*

YOUR POSTMASTER SUGGESTS:

For Faster and More Efficient Postal Service — Learn the "A.B.C.'S" of Good Mailing Habits!

A —postal delivery zone number helps speed your mail!

B —certain to include your return address on all mail!

C —that the delivery address is correct and complete!

— AND —

MAIL EARLY IN THE DAY — IT'S THE BETTER WAY!

EQUIPMENT NEWS...

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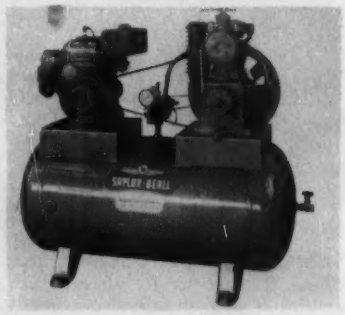

Small Air Compressor

Designed for use on trucks, this compressor is handy for lubrication service, tire inflation, and operation of small pneumatic tools. Its 2-cycle gasoline engine delivers 8 hp and can be equipped with an electric starter. The two-stage compressor produces 23.8 cfm and a pressure of 175 psi. It incorporates a centrifugal unloader for loadless starting.—Saylor-Beall Mfg. Co., St. Johns, Mich.

Circle 322 *on Reader Service Card*

Device Warns Operator Of Overhead Electric Wires

Crane booms now can be equipped with an alarm device that warns the operator whenever his crane boom is approaching live overhead electric wires. The Sigalarm transistorized electronic safety device incorporates a sensor and an interlock unit on the crane boom and it can be pre-set to work from 1 ft to several hundred feet from live wires. The alarm costs $295 and includes an internal battery, interlock unit, installation hardware, and instructions. —Wintronics, 213 S. Hawthorne Blvd., Hawthorne, Calif.

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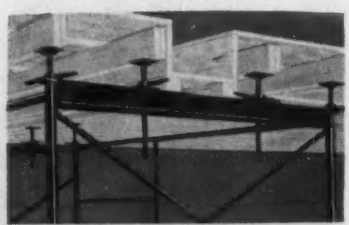
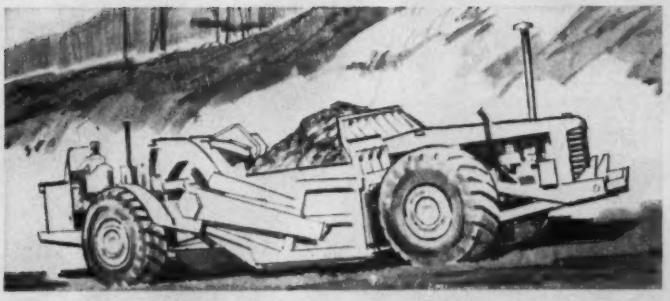


Adjustable Shoring

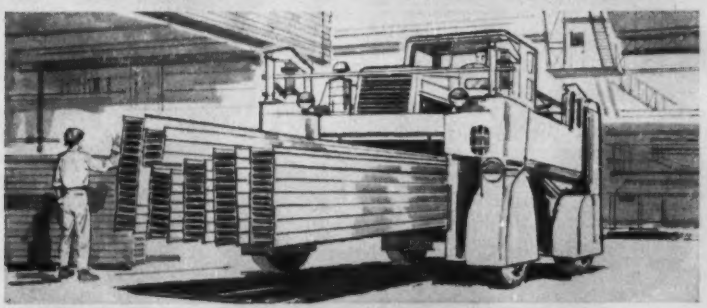
Interior and spandrel beams and open slabs can be shored with less lumber and equipment with Adjustomatic's Scaffold-Truss

ALLISON
smooths out starts
TORQMATICALLY



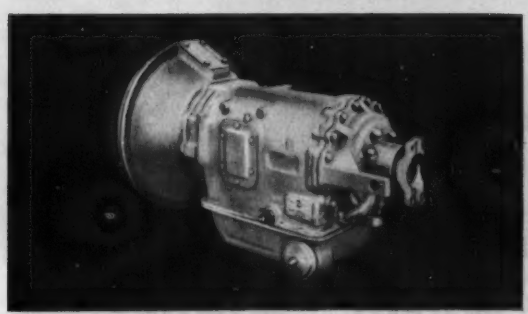
IN 14-YARD SCRAPERS

"Twin Power"—made possible by twin Allison CT-3340 TORQMATIC DRIVES in this Euclid TS-14 scraper – makes every operation smoother. Production is as much as 100% higher, cost per yard 50% less, than for scrapers pulled by tractors.



IN STRADDLE CARRIERS

"Easy Does It" for 30-Ton Loads—Equipped with an Allison CT-3340 TORQMATIC DRIVE, this Gerlinger Material Handler starts 20- and 30-ton loads slick as a whistle for an Eastern steel producer. Unit works 24 hours a day, five days a week, has cut steel handling costs 50%.



IN ANY 125-175 H.P. UNIT

Small off-highway trucks, fire trucks, airport tow tractors, graders—a whole long list of equipment becomes better equipment with an Allison CT-3340 TORQMATIC DRIVE.

This torque converter-hydraulic transmission team has 4 speeds forward, 2 reverse—converter-driven PTO—drive line parking brake—full power shifts at all speeds—optional lockup clutch—can be direct or remote engine mounted.

Want more information? Send for the fact-packed CT-3340 brochure today.

Allison TORQMATIC

TORQMATIC® DRIVES

The world's most complete line of hydraulic drives

Over 980 Models Used by 108 Manufacturers in 100 to 525 H. P. Equipment

Allison Division of General Motors
Dept. CM-1, Indianapolis, Indiana

Please send me application data on your CT-3340 TORQMATIC DRIVE.

Name_____

Title_____

Company_____

Address_____

City_____ State_____

Circle 121 on Reader Service Card

FRAME FOR THE "World's Finest"

A truck cannot possibly be better than its frame. This is Autocar's philosophy, and we build the truck frame accordingly.

Analysis comes first. Precisely *what* is being hauled—*where* will stress and strain fall—how will the conditions of terrain and load be met? Many answers are needed before blueprints are drawn and custom-building begins.

Then Autocar starts with the finest rails money can buy: heat-treated chrome-manganese molybdenum steel. Nut-and-bolt construction throughout, as in modern skyscrapers. *No* extra holes in the frame—only those drilled to specifications.

Result: a frame rigid enough to support the load and maintain component alignment, yet sufficiently flexible for high roadability. Autocar quality starts with the frame, and never stops, for the life of the truck. Take Autocar, nothing less. Comprehensive White-Autocar service throughout the United States.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

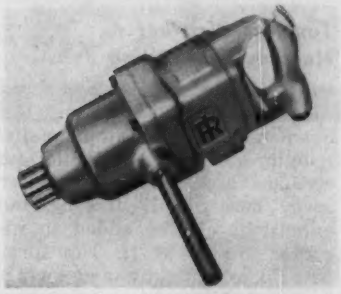
Circle **122** *on Reader Service Card*

EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD; which is just inside the back cover.

shoring frame. Screw jacks can be placed anywhere on this truss reducing the cutting, wedging, and fitting of stub lumber, spandrel beam T-heads, and short soffit headers. — Automatic Devices, Inc., 2400 Adie Rd., Maryland Heights., Mo.

Circle 325 on Reader Service Card



Impact Wrench

At an air pressure of 90 psi the Size 844 Impactool averages 700 impacts per min. It weighs 33 lb, is 14¾ in. long, and has a free speed of 3,500 rpm. The maximum bolt size it can handle is 1½ in. A built- in retainer prevents sockets from falling off accidentally. The design permits maintenance of either the motor or the impact mechanism without disturbing the other.—Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.

Circle 326 on Reader Service Card

Aggregate Weigher

Sand and gravel for paving operations can be weighed easily with the Rex Auto Agg-Weigher. It eliminates the platform scale and allows a truck driver to charge and weigh aggregate by merely pushing a button on a control panel. Controls can be preset to the exact amount of material required on either a pound or ton basis.—Chain Belt Co., Milwaukee 1, Wis.

Circle 327 on Reader Service Card

Hook an OWEN Clamshell Bucket to your crane and you're *sure* of superior performance and longer life. For OWEN Buckets have exclusive super-efficiency and long-lived features you won't find in ordinary clamshells.

For instance:

- Block and tackle type reeving
- One-piece head construction
- Recessed lips
- Single main shaft
- Riveted bowl assembly

For over half a century OWEN has been building clamshell buckets—tailored to meet the requirements of "men who move the earth the world over".

So team your crane to the bucket with the BIG BITE that's JUST RIGHT for every job!

Write today for the money-saving facts and figures.

the OWEN
BUCKET COMPANY
BREAKWATER AVENUE • CLEVELAND 2, OHIO
BRANCH OFFICES: New York • Philadelphia • Chicago • Berkeley, California • Fort Lauderdale, Florida

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ACROWSPAN

Gives you the
QUICKEST
STRONGEST
SAFEST
supports for slab-decking
AT LOWEST COST

Literature C-15 on request

● ACROW, the world's largest formwork specialists offer features, benefits, advantages based on world-wide experience.

● ACROWSPAN... with only two basic components... gives you the greatest range. Built-in camber automatically set. Highest load carrying capacity. Work with ease on widest flange.

● ACROWSPAN is especially ideal when used in combination with high-load-capacity ACROW Steel Vertical Shore.

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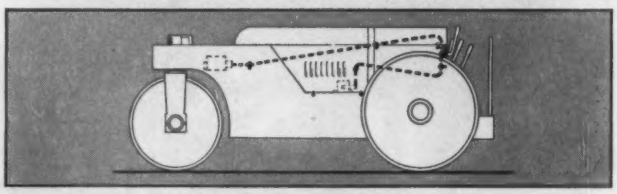
Circle 124 on Reader Service Card

PUSH-PULL CONTROLS
give lifetime remote control on construction equipment



• Whether on a tandem roller like the one above or on *any* piece of construction equipment requiring remote control, TRU-LAY PUSH-PULL CONTROLS will give maintenance-free service. They're factory-lubricated for life, sealed against dirt and moisture, and have but one moving part. Your equipment will be more dependable when equipped with PUSH-PULL CONTROLS for operation of air and hydraulic valves, clutches, transmissions, brakes, power take-offs and similar uses. ***WRITE FOR DETAILS...*** *Ask for Bulletin DH-183.*

ACCO **PUSH-PULL CONTROLS**

Automotive and Aircraft Division
American Chain & Cable Company, Inc.
601-F Stephenson Bldg., Detroit 2 • 6800-F East Acco St., Los Angeles 22
929-F Connecticut Ave., Bridgeport 2, Conn.

Circle 206 on Reader Service Card

EQUIPMENT NEWS...

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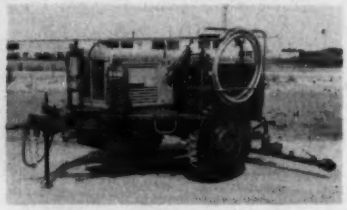


Tankless Distributor Handles Sealcoating Jobs

Originally designed to meet Army Corps of Engineers specs, this Seaman tankless bituminous distributor is now available for civilian applications. Standard spray bars are 12 ft long, but extensions can be added to increase this to 24 ft. The spray bar folds vertically and swings horizontally to the rear for protection in case it strikes an obstruction. Nozzles are spaced at 4 in. The unit includes a 375-gpm pump driven by a 50-hp engine. —Seaman Corp., P.O. Box 3025, Milwaukee 18, Wis.

Circle 328 on Reader Service Card

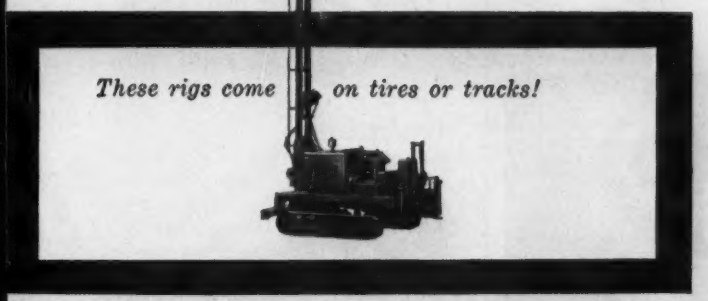
Push-Type Welding Gun And Wire Feeder

Welding in hard-to-reach places is easier with a welding gun that has a 60-deg goose-neck nozzle assembly. It is Airco's Model AH60-B, an air-cooled, push-type welding gun and wire feeder. It is designed for use with the gas-shielded metal-arc welding process. The wire feeder includes a remote speed control that adjusts the wire feed speed up to a rate of 600 in. per min. The unit operates on 115-v, 60-cycle, ac current.—Air Reduction Co., Inc., 150 E. 42nd St., New York 17, N.Y.

Circle 329 on Reader Service Card

LE ROI LRD-2 for low cost, powerful rotary drilling

rotary or down-the-hole drilling ... gas or diesel



Here's a highly portable blasthole drill for drilling holes up to 4½ inches as deep as 30 feet... equipped for either positive-drive rotary drilling or powerful down-the-hole percussive drilling.

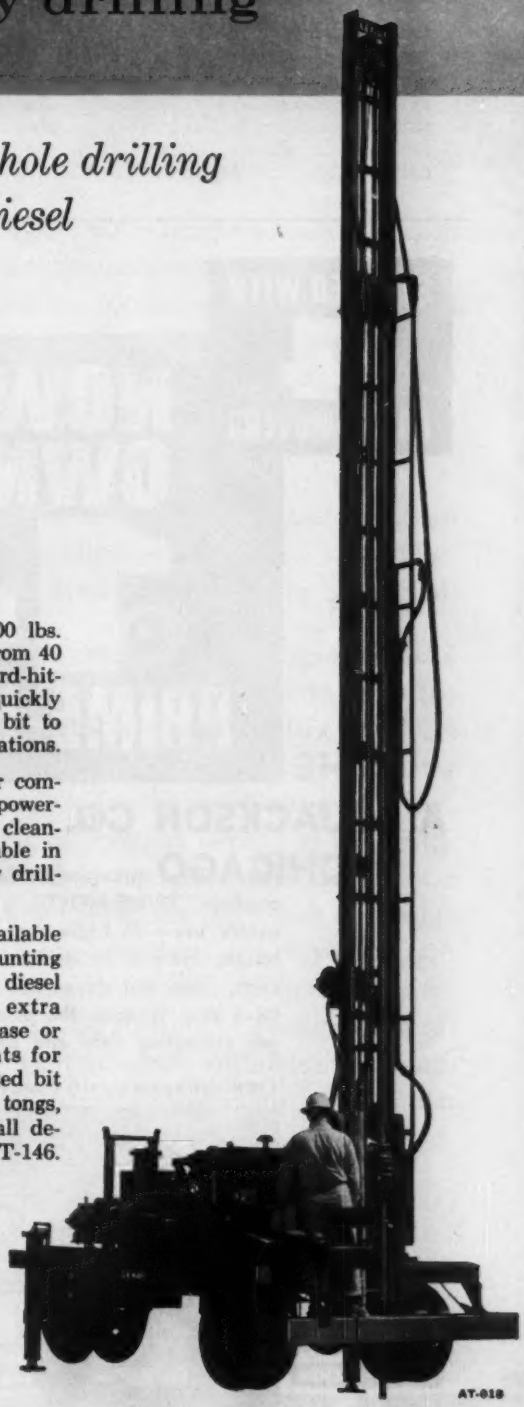
What's more, the LRD-2 is completely self-contained... and economically priced, too!

The entire unit is easily handled by one man. Controls are conveniently grouped at an operator's station located alongside the drilling area. The unit can be moved, leveling jacks hydraulically set, mast hydraulically raised, drill pipe and bits connected, and hole started all with a few non-fatiguing motions.

Powerful direct mechanical drive keeps the rotary table turning — won't bog down or lose torque under rough going like air or hydraulic driven units — eats through tough rock formations under 10,000 lbs. pulldown pressure at speeds from 40 to 250 rpm. If necessary, a hard-hitting down-the-hole drill can quickly be substituted for the rotary bit to drill extremely hard rock formations.

A Le Roi 25 hp two-stage air compressor provides ample air for powering the down-the-hole drill and cleaning out hole . . . or is available in single-stage where only rotary drilling is necessary.

The self-propelled LRD-2 is available either on crawler or tire mounting and with either gasoline or diesel power unit. A whole list of extra equipment is available to ease or speed drilling, including lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, . . . all detailed in Specification Sheet AT-146. Write for your copy.



LE ROI

division of Westinghouse Air Brake Co.

Sidney, Ohio

Circle 125 *on Reader Service Card*

Important NEW features of the

EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

Device Measures Asphalt Level in Bins

A tension-operated device for measuring the level of hot asphalt in bins consists of two sections. One section is in the bin area and includes a system of motors, belts, pulleys, cables, and micro-switches. The other section incorporates electronic gages that are located in a remote, easily accessible area.

Here's how the system works: A weight at the end of a cable hangs inside the bin; the other end of the cable is wound on a drum driven by a reversible electric motor. When the weight drops and reaches the level of the fill in the bin, the tension on the cable relaxes and reverses the motor. The motor then pulls the weight to the top of the bin where it hits a stop switch and increases the cable tension, again reversing the motor. Measurement is taken when the weight reaches the fill level, and the information is stored in a memory cell. The weight goes up and down at least four times per min giving the operator a close check on the material level in the bin. The installation costs about $1,000 per plant.—PolyTech Research, Inc., Orlando, Fla.

Circle 330 on Reader Service Card

STARTED WITH 4 PRIME-MOVERS

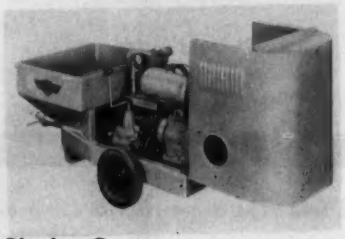
NOW OWNS 14 PRIME-MOVERS

THE A. L. JACKSON CO. CHICAGO provides its laborers with the power to produce. PRIME-MOVER is made specifically for laborers' use — to triple their output in handling of materials. Here is an immediate and positive way to cut costs. Why not do as this alert contractor is doing? Give *your* laborers the power to produce. Write for job estimating data and performance reports.

A PRIME-MOVER places from 12 to 17 cubic yards per hour on the average pour.

THE PRIME-MOVER CO.
PRIME-MOVER
MUSCATINE, IOWA

Circle 126 on Reader Service Card



Plaster Gun

Basically the PG-9 is a finishing machine, but its high production allows the contractor to use it for fireproofing and other applications as well. It is powered by a 9-hp Wisconsin engine and equipped with an 8-cfm Quincy air compressor. Three forward speeds and one in reverse give positive volume selection. Maintenance is easy because greasing is unnecessary.—Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.

Circle 331 on Reader Service Card

Aluminum Cuts Weight Of Side-Dump Haulers

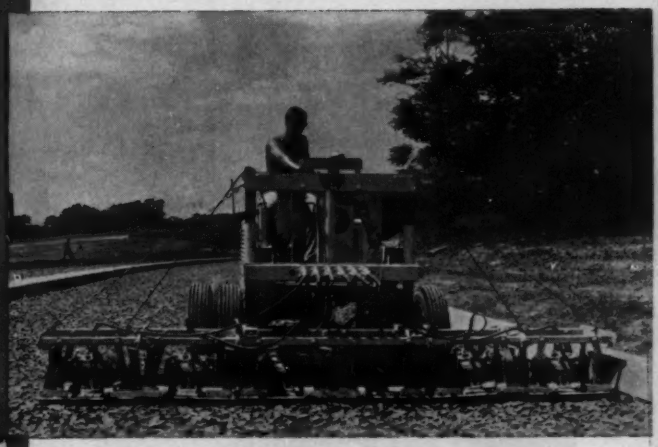
Side-unloading dump trucks and wagon trailers built of aluminum have a minimum dead weight that permits bigger payloads. Each wagon unit weighs only 5,000 lb and measures 8x14 ft. Both the wagon and truck dump bodies carry 10-yd loads. Single-stroke hoist cylinders operated from the truck's cab dump the load to either side of the carrier. The dump body tilts to a 55-deg unloading angle and dumps its load clear of the trailing wagons.—Differential Co., Findlay, Ohio.

Circle 332 on Reader Service Card

Important NEW features of the

JACKSON

AMERICA'S MOST POPULAR
MULTIPLE-SHOE
VIBRATORY COMPACTOR



Changing from the 13 ft., 3 inch working width to 88 inches overall for road travel or maneuverability on the job is accomplished hydraulically in just 30 SECONDS.

The new widening attachment (optional at added cost) is raised or lowered instantly. Makes the JACKSON by far the most efficient compactor for widening projects.

1. The 2 outer compactor units at each side of the workhead can be hydraulically raised to a vertical position for road travel or maneuverability around other equipment in just 30 SECONDS. Compare this with the time consuming job required on other equipment.

2. The new widening attachment can be instantly lifted or lowered when entering or leaving the area to be compacted.

With these added features there is nothing in its category that matches the JACKSON. 4200 3-TON BLOWS PER MINUTE from each of the compactor units provide extremely high productivity. 100% of specified density is frequently attained in one pass. And the Jackson does not leave the top 1-inch of the lift in a loose condition . . . a very important consideration. It operates in either direction . . . no turning or deadheading required. It reduces downtime to a minimum. Maintenance and economy of operation are exceptionally low.

For the best, lowest-cost compacting investigate the JACKSON MULTIPLE COMPACTOR. For sale or rent at your Jackson distributor. Name and further details on request.

C010

JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN

The New Pump That's Making News

Everyone who has seen it in action is talking about it. It's the new Homelite 2" Centrifugal Pump . . . a pump that mates action with quality. It has the works. Light and compact. Weighs only 69 pounds. One man can pick it up, carry it and put it in action anyplace . . . close to your dewatering problems. Handles 10,000 gallons per hour. Self priming, of course, with guaranteed 28 foot lift. In addition to all well-known Homelite features you'll find a new ceramic-coated seal that lasts up to 25 times longer plus an optional automatic idle control. Two models available . . . one with slow speed for fuel and maintenance economy, the other with standard speed for higher heads.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

EXTRA! EXTRA!

NEW AUTOMATIC IDLE CONTROL

The latest news-maker from Homelite is the control accessory that automatically idles engine when water level drops below strainer. Brings engine up to full pumping speed as water level rises. With pump working only when needed you save fuel, maintenance and labor costs. Ask for a demonstration.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 1001 RIVERDALE AVE., PORT CHESTER, N. Y.

◀ *Circle 127 on Reader Service Card* ▲ *Circle 128 on Reader Service Card*

New Product Briefs

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

WELDER for dc arc welding has 150 to 350 and 50 to 200-amp ranges. One model produces dc auxiliary power; the other provides auxiliary ac power and 6.5 kw ac power while welding.—National Cylinder Gas.

Circle 333 on Reader Service Card

TRACTOR SHOVEL with 7-ft dumping clearance is handy for loading bulk materials into high trucks and containers. Lifting capacity of the Y-18 is 1,600 lb; buckets range from 12 to 27 cu ft.—Yale.

Circle 334 on Reader Srevice Card

EARTH AUGERS are 54 in. long and are available in various diameters ranging from 24 to 48 in. Other Pengo augers, in sizes from 54 to 96 in., are available in the twin helix type.—Petersen Eng.

Circle 335 on Reader Service Card

NAIL DRIVER is operated by compressed air and can drive any nail from a 20 to a 60-penny size. The CP-5XBND nail driver is 14 in. long and weighs only 5¾ lb.—Chicago Pneumatic.

Circle 336 on Reader Service Card

LOADER fits International 660 wheel tractor and is powered by its hydraulic system. The self-leveling Wagner No. 625 loader can lift 4,000 lb to a height of 13 ft.—International Harvester.

Circle 337 on Reader Service Card

VIBRATOR produces from 12,000 to 15,000 vpm and is handy for vibrating stiff mixes. The YUA 60-cycle, motor-in-head unit operates on 115 v ac or dc. Vibrator head diameter is 2⅝ in.—Stow.

Circle 338 on Reader Service Card

TWO BURNERS utilize LP gas. The CW-2 (3½ lb) produces 600,000 Btu; the CW-3 (5½ lb) is rated at 1 million Btu. For bigger jobs, several can be used in batteries or in series.—Corwill International.

Circle 339 on Reader Service Card

TIRE VALVE extensions and spuds for off-highway rigs fit both tube and tubeles tires. To convert to tube tires, the valve hole is sealed with a plug and a new hole is drilled. —A. Schrader's Son.

Circle 340 on Reader Service Card

MATERIALS HAULER on three wheels carries 11-cu ft dump hopper rated at 800 lb. An 8-hp engine drives the 780 Truckster. Its transmission has three speeds forward, one in reverse.—Cushman Motors.

Circle 341 on Reader Service Card

CONCRETE GRINDING machine, Terrco 501, weighs 479 lb and comes with three removable 55-lb weights. Its 5-hp electric motor draws only 13.5 amp at full load.—Terrazzo Machine and Supply Co.

Circle 342 on Reader Service Card

STEEL BUILDINGS for use as field offices are made in 8-ft wide units 10 ft 4 in. long. Space can be increased by combining two or more units. A single unit costs $194, a double $360.—Pennington Mfg.

Circle 343 on Reader Service Card

TWO-WAY RADIO weighs only 20 oz and provides 40 hr of continuous operation. The Duo-Com 100 has a 100-milliwatt transmitter with a maximum operating range of 5 mi. —Osborne Electronic Sales.

Circle 344 on Reader Service Card

SAFETY LIGHT with 7-in. amber colored lens operates on 6-v battery. Model 1751A produces 55-millisec flashes 135 times per min; Model 1751B produces 67 flashes per min.—Fisher-Pierce.

Circle 345 on Reader Service Card

TIRE with two plies of steel cables imbedded in the rubber beneath the tread cannot be punctured by debris scattered about construction sites. The pneumatic tire has an all-purpose tread.—B. F. Goodrich.

Circle 346 on Reader Service Card

TRUCK SERIES includes: two single-axle tractors rated at 65,000 and 78,000 lb gcw, two tandem-axle tractors at 70,000 and 78,000 lb gcw, two tandem trucks rated at 42,000 and 52,000 lb gvw.—Reo.

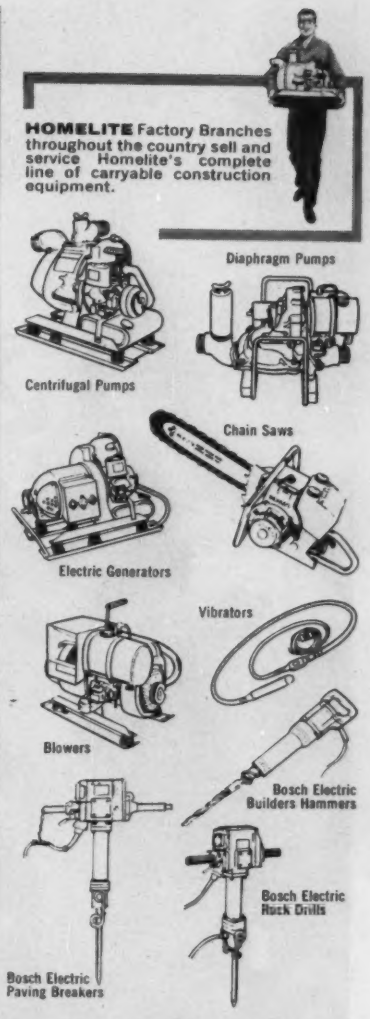
Circle 347 on Reader Service Card

ROCK DRILL weighs 58 lb and is 23¾ in. long. Its bore is 2⅝ in., its stroke 2½ in. Chuck size is 1x 4¼ in. The Davey-Holman Silver Bullet can drill blastholes to a depth of 18 ft.—Davey Compressor.

Circle 348 on Reader Service Card

U-JOINT TOOL for removing universal joint bearings weighs less than 5 lb, sells for $19.95. The Speedee tool's large socket draws bearings out of the yoke without pressure.—Legvold Enterprises.

Circle 349 on Reader Service Card



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

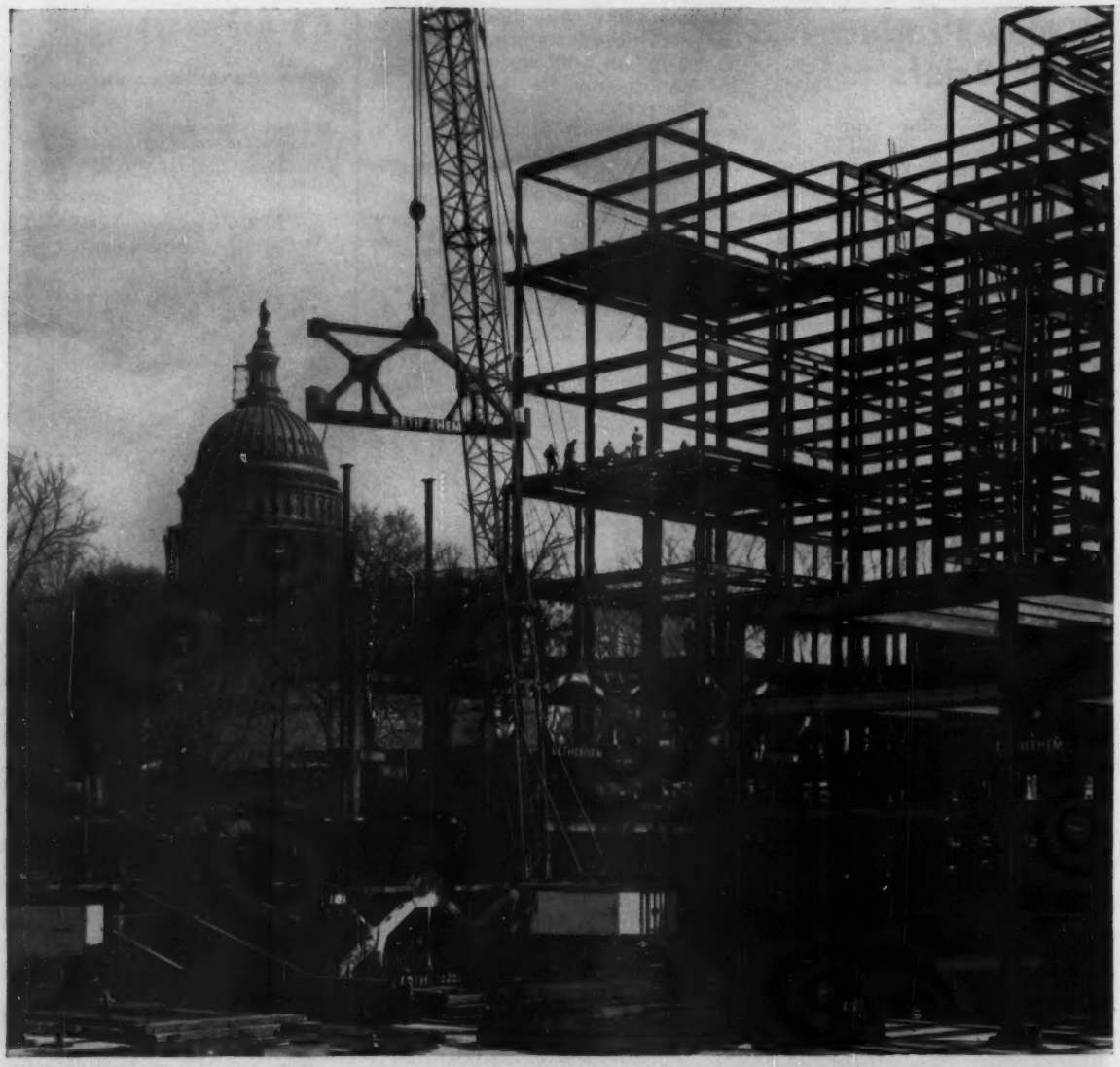
HOMELITE

A DIVISION OF TEXTRON INC.

1001 Riverdale Ave., Port Chester, New York

In Canada:

TERRY MACHINERY CO. LTD.



GENERAL CONTRACTOR: McCloskey & Co.

Heavy truss gets ride on Capitol Hill

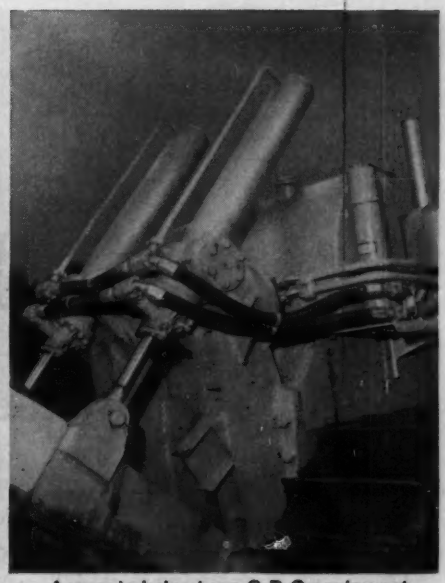
This 14-ton steel truss being raised into position is 36 ft long. It's one of 128 trusses being used in the construction of the House of Representatives Additional Office Building, in the nation's capital. Upon completion, the 9-story structure, with its 33,600,000 cu ft of space, will be the largest of the buildings occupied by the legislative branch of government.

Bethlehem Wire Rope was called upon for countless lifting jobs at this gigantic construction project. Day after day, as the steel went into place, this quality rope gave reliable, economical service.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.
Export Sales: Bethlehem Steel Export Corporation
Wire Rope depots and distributors from coast to coast stock Bethlehem Rope

BETHLEHEM STEEL

Aeroquip Hose, special elbows, and Reusable Fittings serve this hydraulic-powered Kelly Ripper.



Aeroquip helps keep C-R-C equipment hard at work.

"...we've standardized on Aeroquip and have had excellent results."

Says Ken Defenbaugh, Vice President and General Manager, Crutcher-Rolfs-Cummings, Inc., Houston, Texas.

Crutcher-Rolfs-Cummings, Houston, Texas, is a leading supplier of pipeline equipment and supplies, with world-wide distribution. Anxious to give customers maximum dependability in equipment performance, C-R-C has standardized on Aeroquip. For example, this hard-at-work Kelly Ripper is equipped with Aeroquip 1509 Multiple Wire Braid Hose, special elbow configurations and Reusable Fittings, for 1500 psi hydraulic pressure lines. Return lines are Aeroquip 2651 Single Wire Braid Hose.

Users of C-R-C products find Aeroquip Hose Lines with reusable fittings on the equipment provide long service life, and reduce downtime. As easy to specify as to apply, Aeroquip Hose and Reusable Fittings save time and money when infrequent hose replacement is required. Hose is cut to length and installed right on the job . . . no special tools needed! Fittings can be reused again and again.

A fluid line specialist, your Aeroquip Distributor will give you a copy of our Industrial Catalog No. 204. And he will explain why you are in good hands when you consult with Aeroquip. His telephone number is in the "Yellow Pages" under "Hose".

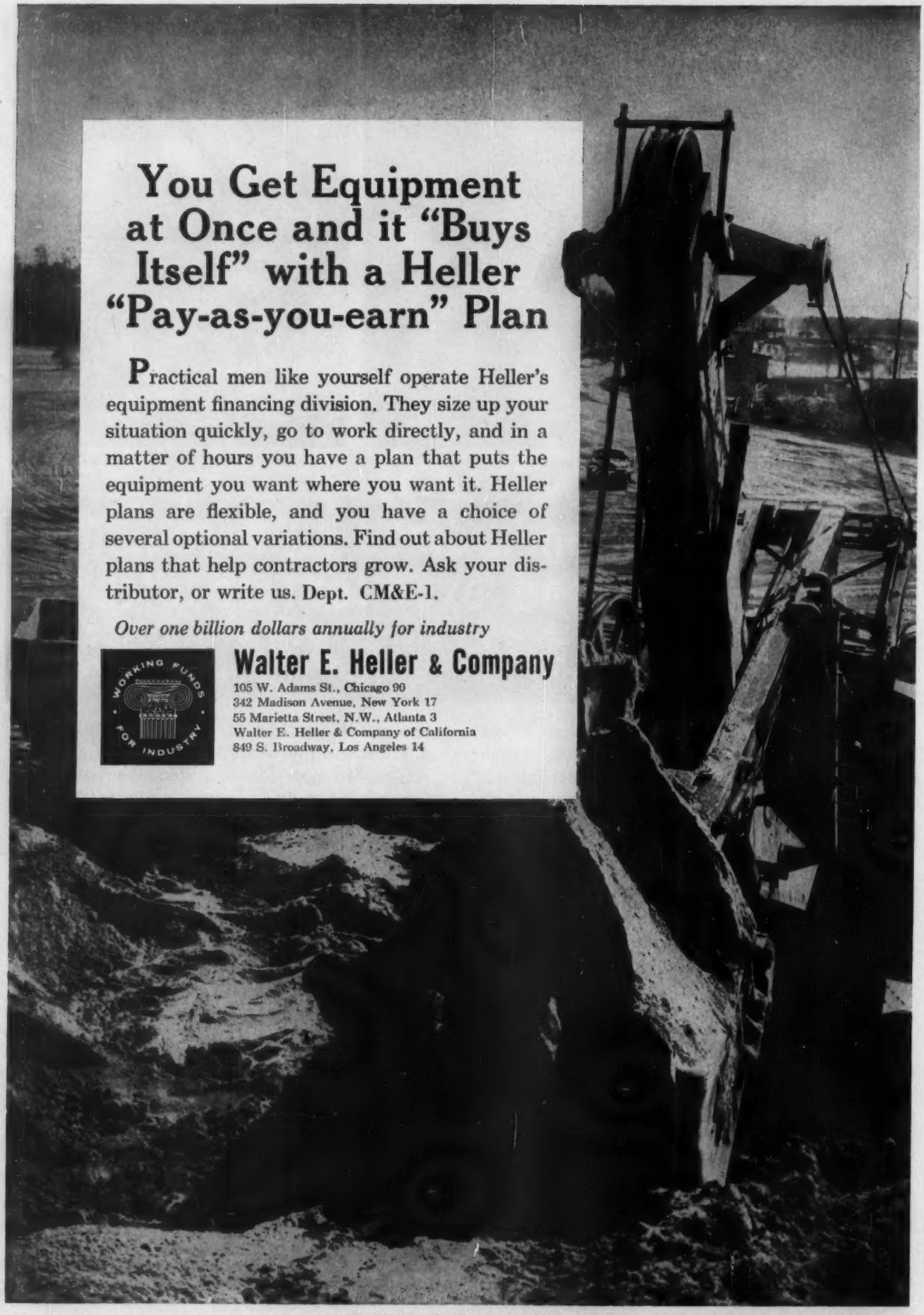
Aeroquip is so easy to use . . . your inventory is just a few feet of hose and a handful of fittings.

Aeroquip

AEROQUIP CORPORATION, JACKSON, MICHIGAN

INDUSTRIAL DIVISION, VAN WERT, OHIO • WESTERN DIVISION, BURBANK, CALIFORNIA
AEROQUIP (CANADA) LTD., TORONTO 19, ONTARIO
AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A., CANADA, AND ABROAD

Circle 131 *on Reader Service Card*



You Get Equipment at Once and it "Buys Itself" with a Heller "Pay-as-you-earn" Plan

Practical men like yourself operate Heller's equipment financing division. They size up your situation quickly, go to work directly, and in a matter of hours you have a plan that puts the equipment you want where you want it. Heller plans are flexible, and you have a choice of several optional variations. Find out about Heller plans that help contractors grow. Ask your distributor, or write us. Dept. CM&E-1.

Over one billion dollars annually for industry

WORKING FUNDS FOR INDUSTRY

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342 Madison Avenue, New York 17
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Walter E. Heller & Company of California
849 S. Broadway, Los Angeles 14

Circle 132 *on Reader Service Card*

New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate numbers on the READER SERVICE CARD just inside the back cover.

GROUNDWATER CONTROL—The patented Cronese slurry trench method of groundwater control is described in a 6-p booklet. The method, using bentonite, prevents the flow of water under earthfill dams, levees, foundation walls, cofferdams, and other hydraulic structures.—Cronese-Terminal, 102 N. Brand Blvd., Glendale 3, Calif.

Circle 350 on Reader Service Card

FINISHERS — A 24-p brochure covers the crawler-mounted Model SA-60 and the wheel-mounted Model SB-60 heavy-duty asphalt finishers. Sixteen new features, including planetary steering and a self-cleaning 10-ton capacity hopper, are also covered in the booklet.—Barber-Greene, 400 N. Highland Ave., Aurora, Ill.

Circle 351 on Reader Service Card

CRANES—Bulletin SC-60-1 devotes four of its eight pages to the Model C-350 crawler crane-excavator, underscoring its usefulness on land and water conservation jobs. Two pages of the booklet cover the truck-mounted T-350 crane. The rest of the booklet gives a rundown on all crane attachments. — Schield Bantam Co., Waverly, Iowa.

Circle 352 on Reader Service Card

PILES—A 16-p booklet describes the complete pile driving and soil testing services performed by Guild. Special emphasis is placed on the Cobi pile—a constant cross-section, spirally corrugated, steel unit driven with a pneumatically expanded mandrel and then filled with concrete.—C. L. Guild Construction Co., Inc., 90 Water St., East Providence, R. I.

Circle 353 on Reader Service Card

WELDER—Details on the trackless carriage for Lincoln's semi-automatic Squirt welder are presented in a 4-p bulletin (5205.2). The magnetically-supported travel unit, the Squirtmobile, increases the portability of the submerged arc welding gun. — The Lincoln Electric Co., Cleveland 17, Ohio.

Circle 354 on Reader Service Card

SCRAPER—The Speedpull, a 20-yd-capacity, six-wheel tractor-scraper combination, is illustrated in a 16-p booklet. Weighing 49,000 lb, the machine attains speeds up to 38 mph. A Cummins engine produces 276 hp at 2100 rpm. —LeTourneau-Westinghouse Co., Peoria, Ill.

Circle 355 on Reader Service Card

NUCLEAR GAGES — A 6-p brochure describes how to use nuclear gages for rapid field determination of moisture and density in soils, aggregates, concrete, asphalt, and other materials. The probes may be used on the surface of the material being tested, or they can be inserted into bore holes to measure moisture and density at depths to 200 ft.—Nuclear-Chicago Corp., 359 East Howard Ave., Des Plaines, Ill.

Circle 356 on Reader Service Card

WELDING SCHOOL—A program in arc welding education at Lincoln Electric Co. is outlined in a 10-p. bulletin. A 5-week course covering fundamentals can be expanded to over 11 weeks by including such subject matter as pipe welding, hardsurfacing, alloy welding, semi-automatic submerged arc welding, and tungsten inert gas welding.—The Lincoln School of Welding, 22801 St. Clair Ave., Cleveland 17, Ohio.

Circle 357 on Reader Service Card

CRANES AND SHOVELS—A 4-p folder covers Little Giant's crane and shovel line. It illustrates the hydraulically-actuated trenchoe and shovel buckets, as well as all regular attachments such as dragline, concrete bucket, pile driver, crane, and magnet.—Little Giant Crane & Shovel, Inc., E. 16th and Howard Dr., Des Moines 13, Iowa.

Circle 358 on Reader Service Card

FLOTATION TIRES — A 16-p pocket-size booklet describes flotation tires and the properties that distinguish them from conventional tires. Eleven types of construction equipment suitable for conversion to flotation tires are listed along with recommended conversion sizes and tire loadings. — Harmo Tire Rubber Co., 1800 W. Fort St., Detroit 16, Mich.

Circle 359 on Reader Service Card

BANTAM compact

COMING SOON!

The new BANTAM Compact is ready to join its big brother (Series 350). It brings fresh cost-cutting ideas. Watch for it.

Follow the leader . . .
SEE YOUR BANTAM DISTRIBUTOR

Circle 133 on Reader Service Card

NEW 3/4-ton Pull-A-Way
Added to WRIGHT TYPE "C" LINE!

FOUR SIZES • ¾, 1½, 3 and 6 Tons

FEATURES
- Lubricated for life
- Hooks are drop-forged
- Special alloy-steel chains
- Chain sheaves of drop-forged alloy steel
- Gear teeth cut to precision limits
- Load brake is dependable and safe
- Weights: ¾-ton, 12½ lbs. 1½-ton, 23½ lbs. 3-ton, 36½ lbs. 6-ton, 63 lbs.

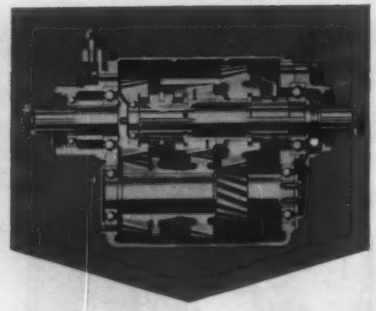
New 3/4-ton model
• VERSATILE
• LIGHTWEIGHT

ACCO

Write to York, Pa., office for complete information

Wright Hoist Division
AMERICAN CHAIN & CABLE
York, Pa., Bridgeport, Conn.

Circle 207 on Reader Service Card



Specify

FULLER

Specify the

MODEL

For heavy duty trucks and tractors specify the

FULLER '92 SERIES

3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

92 SERIES (Heavy-Duty) RATIOS

	SPLITTER RATIOS		DEEP REDUCTION
MODEL	High	Inter-mediate	Low
3-A-92	.74	1.00	2.09
3-B-92	.84	1.00	1.24
3-C-92	.75	1.00	2.64
3-D-92	.75	1.00	1.24
3-E-92	.84	1.00	2.09
3-F-92	.84	1.00	2.64
3-G-92	1.00	1.327	2.09
3-H-92	1.00	1.327	2.64

Specify

Specify the MODEL

FULLER TRANSMISSION DIVISION

EATON MANUFACTURING COMPANY

KALAMAZOO, MICHIGAN

Circle 134 on Reader Service Card

Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to Dec. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

PRESSES—Catalog 315A details horizontal, vertical, inclined, and portable forced presses from 100 to 600 tons.—Rodgers Hydraulic.

Circle 360 on Reader Service Card

ENGINES—Wisconsin engines, from 3 to 56 hp, that power construction equipment are described in Bulletin S-254.—Wisconsin Motor.

Circle 361 on Reader Service Card

CRANE—Here's data on Model 3900 crawler crane with a 60-ft boom that lifts 100 tons at 15-ft radius. —Manitowoc Engineering.

Circle 362 on Reader Service Card

AGGREGATE—A 128-p handbook provides information on aggregate and aggregate production machinery.—Smith Engineering Works.

Circle 363 on Reader Service Card

CONCRETING—Catalog GA30 describes how Model G-42 mixes and shoots concrete with up to ¾-in. aggregate.—True Gun-All.

Circle 364 on Reader Service Card

TRAILERS — A catalog illustrates Transport's new line, including gooseneck, tandem axle, and tilt trailers.—Transport Trailers.

Circle 365 on Reader Service Card

FORMS—Booklet describes the use of steel-ply forms during erection of nation's largest prestressed concrete water tanks.—Symons.

Circle 366 on Reader Service Card

RADIOS—Literature describes RCA Low Drain transistorized two-way radio systems for construction and ready-mix operations.—RCA.

Circle 367 on Reader Service Card

ROLLER CHAINS—Catalog presents all types and sizes of multiple and single strand chains for construction machines.—Diamond Chain.

Circle 368 on Reader Service Card

FORM PANELS—EFCO regular panels and flexible panels that form angles of any degree are illustrated in a catalog.—Economy Forms.

Circle 369 on Reader Service Card

BELTING—A new Tensilized Nylon belting that won't weaken when exposed to moisture is covered in a brochure.—Goodall Rubber.

Circle 370 on Reader Service Card

TRACTOR-SHOVEL — Bulletin 424 covers the Payloader line of 20 models with operating capacities up to 12,000 lb.—Frank G. Hough.

Circle 371 on Reader Service Card

ASPHALT PLANTS — Booklet gives data on asphalt plants delivering up to 350 tph with 1,000 to 10,000 batch capacities.—Lima Madsen.

Circle 372 on Reader Service Card

REMOTE CONTROLS—Bulletin DH-183 describes Tru-Lay push-pull remote controls for heavy equipment.—American Chain & Cable.

Circle 373 on Reader Service Card

IRON CASTINGS—A 168-p catalog provides data on gray and ductile iron castings, such as drain and manhole covers.—Neenah Foundry.

Circle 374 on Reader Service Card

POWER CHAIN SAW—Full information is available on seven professional models of portable power chain saws, $149.95 up.—McColloch.

Circle 375 on Reader Service Card

PANEL FORMS—Booklet gives details on rental of Uni-Form panels, a tailor-made forming system delivered to job.—Universal Clamp.

Circle 376 on Reader Service Card

CONCRETE BUGGY—Detailed information on powered buggies includes job estimating data and performance reports.—Prime-Mover.

Circle 377 on Reader Service Card

SUPPORTS—Acrowspan Bulletin C-15 details horizontal telescopic shores with built-in cambers to support slab deck pours.—Acrow.

Circle 378 on Reader Service Card

ACCESSORIES—Catalog presents the complete line of Sure-Grip concrete accessories to meet forming needs.—Dayton Sure-Grip & Shore.

Circle 379 on Reader Service Card

HYDRAULIC DRIVE—Information on the CT-3340 Torqmatic drive, available in a variety of machines, is given in a brochure.—Allison.

Circle 380 on Reader Service Card

DRILL—Spec sheet AT-146 details the tire or crawler-mounted LRD-3 rock drill for up to 4½ in.-dia holes to 30 ft deep.—LeRoi.

Circle 381 on Reader Service Card

Scraper performance is important through

EVERY INCH OF THE WORK CYCLE

Allis-Chalmers' new TS-360 Motor Scraper—30 yards heaped—was designed with four major performance factors in mind: acceleration under load, sustained haul speeds, exceptional maneuverability and full-power spreading on the fill.

To achieve this performance, the 340 hp scraper is equipped with a Fuller 5-G-1520 5-speed Transmission. The heavy-duty, constant-mesh, spur-gear transmission features the Fuller Air-Actuated Countershaft Inertia Brake, which permits quick, easy up-shifts without double-clutching. Activated simply by pushing a button, the countershaft brake helps maintain momentum during shifts for maximum acceleration and sustained speed throughout the entire work cycle.

The 5-G-1520 is also equipped with the Fuller Pressure Lubrication and Filtration System which keeps gear oil clean, provides longer gear and bearing life and higher equipment availability.

Ask your equipment dealer about the Fuller Transmission designed to get more work from *your* equipment, put more profit in *your* operation.

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Circle 135 on Reader Service Card

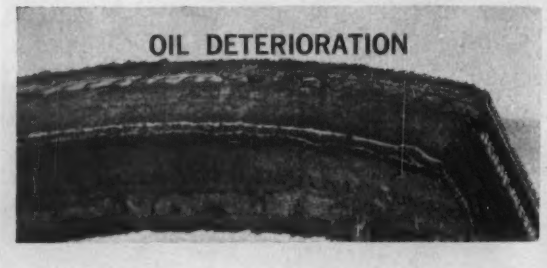
Maintenance Shop...

V-Belt Failures and Their Remedies

EQUIPMENT DOWNTIME resulting from broken V-belts can be reduced by visually inspecting the break and correcting the situation that caused it. Here are some typical V-belt failures, their causes, and ways to correct them as recommended by the B. F. Goodrich Co.:

CAUSE Contact with oil and grease softens the rubber and reduces strength of the belt.

REMEDY If possible, install splash guards to shield belt; or use oil-resisting belt.



CAUSE Dirt in sheaves wears away sidewalls, letting belt drop to bottom of groove.

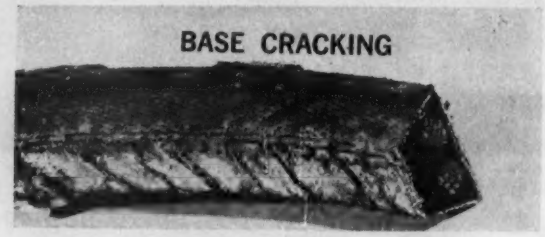
REMEDY In dusty places install guards to help protect belt against dirt and abrasion.

CAUSE Prying belt over sheave or sharp objects and dirt in groove damage cover.

REMEDY Move the motor pulley or sheave when installing belts; keep grooves clean.

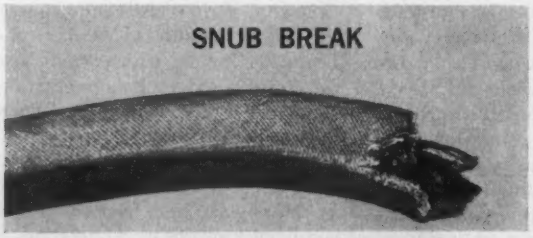
CAUSE Improper storage or severe back bend idlers cause serious cracking at base.

REMEDY If idler is needed, use extra 0.2 service factor to figure number of belts.



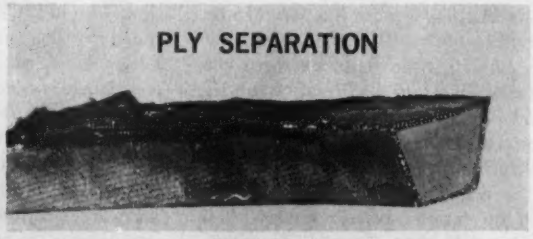
CAUSE Cover wear indicates slip; when belt grabs, sudden snap causes clean break.

REMEDY Make sure belts are taut. Proper tension increases belt life at least 50%.



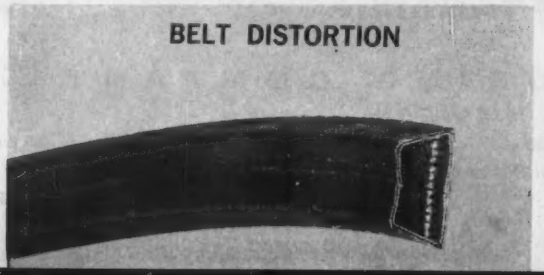
CAUSE Split along pitch line indicates that belt was run over too small a sheave.

REMEDY Examine the drive design and install sheaves that have a larger diameter.



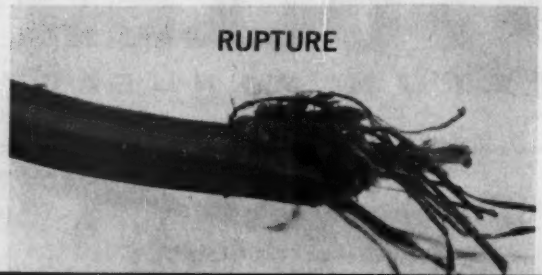
CAUSE Breakdown of internal adhesion or cords broken by prying will distort the belt.

REMEDY Do not pry belts on drives. Make sure sheaves are of recommended diameters.



CAUSE Cords in grommet or belt plies may have been defective or completely ruptured.

REMEDY Make sure rocks or tools can't fall on sheave grooves. Check belt tension.



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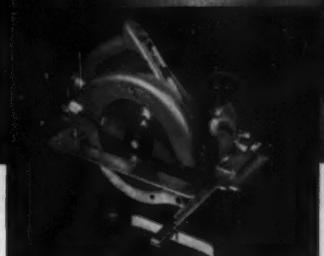

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The new Master Power #408 cuts most anything—sheet steel, corrugated roofing, channel iron, bar stock, wood, aluminum, cast iron, and more. Comes complete with carrying case and rip fence. Mail coupon for a free demonstration or additional information. *Leading distributors everywhere.*

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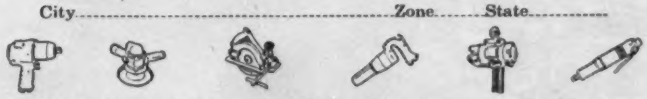


In Canada: Master Pneumatic Tools (Canada) Ltd., Rexdale-Toronto, Ontario

Circle 137 on Reader Service Card

PAVES QUALITY MAT AT 140 FPM, ELIMINATES SECOND FINISHER

Big Barber-Greene finishers on tracks and rubber acclaimed paving pacemakers by owners in South Carolina, West Virginia

Two new high-capacity Barber-Greene finishers—the SA-60 crawler-mounted machine and the pneumatic SB-60 model—are proving with unmatched high capacity high quality production that they deserve the title of paving pacemakers.

E. G. Shuler, General Superintendent for J. F. Cleckley & Co., Orangeburg, S. C., reports on the crawler-mounted SA-60 model:

"Our big SA-60 really cuts the mustard for us putting down high quality mat at 140 fpm for as long as we can keep trucks out in front. We averaged 90 fpm on one 11′ paving job where we had binder courses of 1″ and 2″ and a 1″ top course. We intended when we bought this model to eliminate a second finisher on our jobs, and the SA-60 does just that.

"We've owned Barber-Greene finishers since we started in the hot mix business back in 1950, but we've never had a machine that could handle the tonnage this model does. We've already put 65,000 tons through the machine this season with no maintenance problems. And our operators love it."

Pneumatic Model SB-60 praised

Acme Construction Co., Beckley, W. Va., prefers the same machine mounted on rubber tires—the SB-60—for these reasons:

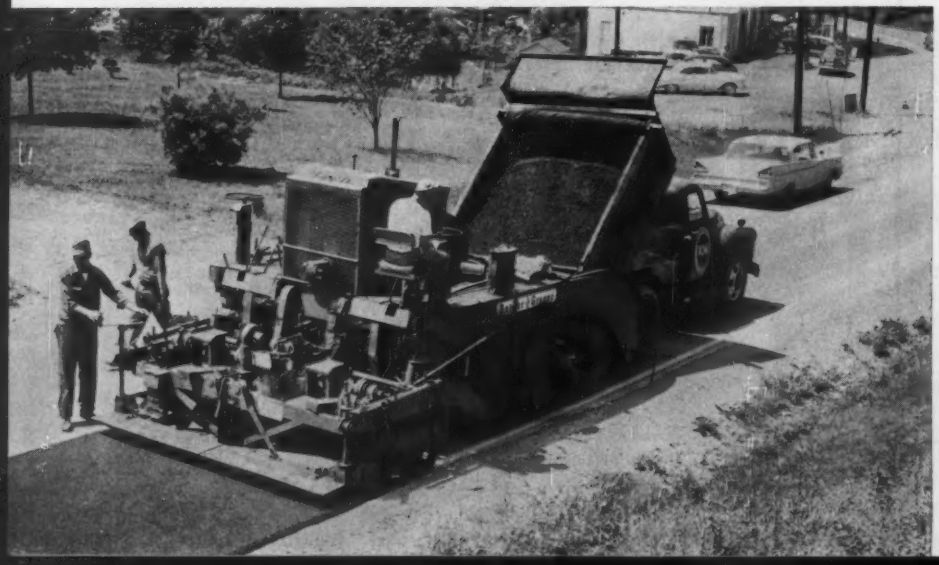
Supt., J. B. Bibb, "Our SB-60 Barber-Greene gives us higher laying and travel speed than we've ever gotten with any paver. It lays a level mat on the most adverse base conditions.

"Long runbacks used to mean shutting down our plant for as much as 30 minutes—but not since the SB-60 came on the scene. The SB-60 travels back at speeds to 15 mph, so the plant keeps running and there's no build-up of trucks."

13 fast width changes

E. L. Spencer, operating foreman, adds, "On our present job, we hit 13 mat width changes in 1,500 lineal feet. The ease with which we can cut-off or extend normal laying width with the SB-60 is a big time saver. Also, the big power, traction, oscillating truck push-rollers and power steering lets us breeze through this job over hilly terrain with steep grades and almost continual turns. We're 100% satisfied."

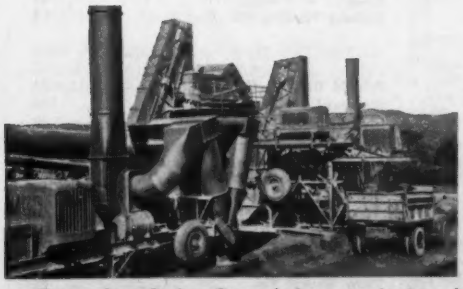
Get full facts on both models from your Barber-Greene Distributor. Either the SA-60 or SB-60 will give you highest capacity performance and make the most of your plant, your truck fleet, and your manpower.



RUBBER-TIRED SB-60 BARBER-GREENE FINISHER is seen resurfacing U.S. 60 for Acme Construction Co., Beckley, W. Va. High capacity paver easily made 13 width changes on a 1,500′ stretch of this job. Fast runbacks—15 mph—eliminated 30 minute plant shutdowns previously experienced.

These new rubber-tired and crawler-mounted high capacity Barber-Greenes deliver unmatched asphalt paving performance through new operating features never before available on any asphalt finisher. Write for your copy of new 24-page catalog.

SA-60 CRAWLER-MOUNTED BARBER-GREENE FINISHER paves at 140 fpm for J. F. Cleckley & Co., Orangeburg, S. C. On 40,000-ton resurfacing job on U.S. 23 and U.S. 25 in South Carolina, foreman and operator called it "easiest handling finisher to come down the pike."



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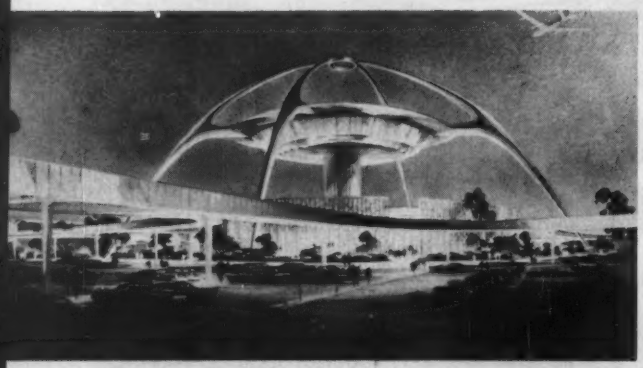


Space Age Airport

Theme Structure, a fanciful building resembling a giant sculpture, will dominate the 3,000-acre Los Angeles International Airport when it is completed this year. The structure consists of two intersecting parabolic steel arches whose legs span 340 ft. Suspended from the arches, 70 ft in the air, is a 100-ft-dia saucer made of glass, steel, and concrete. It houses a restaurant and observation facilities.

All structural components are covered with a coating of sprayed-in-place vinyl. It protects the Theme Structure against weather, gives the surface a uniform texture, and reduces maintenance. The coating is made from materials produced by Union Carbide Plastics Co. Architects for the project are a joint venture of West Coast designers Charles Luckman, Welton Becket, and Paul R. Williams.

Bridge Catches a Trespassing Truck

Commercial vehicles are not allowed on the Northern State Parkway in Long Island, but a driver of a Florida trucking firm ignored the regulation—and was caught red handed. The truck got as far as an overpass that was being built to carry an expressway over the parkway. The Rapone Contracting Corp. of Hicksville, N.Y., was using steel beams to support concrete for the overpass without obstructing the traffic below.

Clearance under the form supports was sufficient for cars, but not for the Florida truck. Not realizing this, the driver tried to go through anyway and wedged his trailer under the incomplete structure, shearing off five of the support beams. Irate work crews at the job site threw up a pile of dirt to make sure the truck wouldn't get away before police came. Later it took an emergency crew nearly two hours to get the truck out. And the driver was issued a summons for driving a commercial vehicle on the parkway.

Red Builders Try Medieval Technique

Today's Soviet engineers may claim advances in soil stabilization techniques utilizing vibration and electricity, but they are not far ahead of some monks who built tunnels in the 13th Century. The monks dug a passageway through unstable clay from a monastery to a nearby river in the vicinity of Ryazan. To keep the tunnel from caving in, they used fire to harden the walls which today are still as hard as concrete.

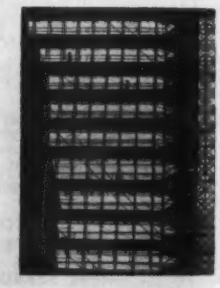
According to a Russian trade magazine, a similar approach was tried recently during the construction of a 300-ft-high smokestack on unstable soil. Instead of constructing elaborate foundations, the builders just drilled two wells 35 ft deep, pumped in air and gas, and set the gas on fire. Within ten days, the soil was turned into solid glazed material with the strength of brick.

AASHO Road Test Ends

After two years and more than 17 million mi, the 126 trucks on the 8-mi AASHO test road near Ottawa, Ill., have stopped rolling. Now the analysts—both human and electronic—will go to work studying the 300 million pieces of data collected during the test. Final results have to be in by Oct. 30.

Estimated cost of the test is $27 million, but $4.5 million of this will be recovered by incorporating parts of the four-lane test highway into Interstate Highway 80. The test road consists of 836 sections, each a different combination of materials, reinforcement, thickness, and subbase.

The performance of the pavements is expected to show what—if any—maximum weight limits should be placed on vehicles and how the tax burden should be distributed among highway users. Findings of the test will be used by states as guides in roadbuilding. The reports will be submitted to the Highway Research Board for publication and distribution to members of AASHO and the Bureau of Public Roads.



A Church on its Side?

No, the Picture of the Month on page 43 is not a photo of a church accidentally built on its side. It shows a series of runways extending from a hoist tower on the new IT&T Building in New York City. The hoist tower is a 449-ft double Gold Medal steel tower made by Patent Scaffolding Co. and erected by Chesebro-Whitman Co. Contractor on job is Uris Brothers, Inc.

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SPECIAL THIS MONTH

R19 PROFITABLE FIELD LUBRICATION PRACTICES . . . 50¢

Contractors' practices and mobile lubrication equipment are covered in a 16-page booklet that also describes a simplified lubrication program and the operations of an equipment maintenance company and of a maintenance contractor.

PAVING . . . How To Get The Best Results . . . 50¢

R1 A 51-page booklet containing outstanding articles on the subject of paving. Covers bituminous surface treatments, mixed-in-place bituminous surfaces, bituminous penetration macadam, plant-mix bituminous pavements, preparation for concrete paving, batching and mixing concrete, placing and finishing concrete, jointing and curing of concrete paving, mixed-in-place pavements.

CONCRETE MIXING AND PLACING . . . 50¢

R2 An 88-page booklet containing a series of articles on the fundamental principles of concreting for all types of structures. Subjects include: concreting equipment selection, application, and maintenance; production factors; form planning, design, and construction; design and control of concrete mixes; handling and placing concrete; underwater concreting.

EARTHMOVING . . . An Art and a Science . . . 50¢

R3 A 64-page booklet dealing with the fundamentals of earthmoving. Subjects include: equipment selection and application; application of scrapers and rooters; equipment ownership and operating costs; production and cost estimates; maintenance and repair; operation of shovels, hoes, cranes, draglines, clamshells; excavator operating costs; engineering on the project.

PRESTRESSED CONCRETE . . . 50¢

R5 A 20-page special report dealing wit stressing applications; commercial pr ket for contractors; pre-tensioning bed prestress products.

EQUIPMENT MAINTENANCE GUIDE . . . 50¢

R6 A 36-page booklet in which 15 service proper maintenance of crawler tractors rollers, compressors, trenchers, crush asphalt plants, loaders, air tools, paver tractors.

HOW TO IMPROVE CONTRACTOR-LABOR RELATI

R7 An 8-page booklet dealing with the st can take to improve labor relations, doing and can do, and hints for job s moving.

DOES YOUR INSURANCE PROGRAM *REALLY* PRO

R8 A 12-page booklet by a construction explains the importance of a sound strengthen liability coverage . . . how t and your property. Included is a chec for contractors.

SURETY BONDS . . . Their Function, Value and Effe

R9 An 8-page article discusses the differen and insurance coverages, tells how sur uated, and describes various types of s

BLASTING AGENT SLASHES POWDER COSTS BY

R10 This editorial reprint deals with a blast powder costs to 4.5 cents per yd of roc

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COMPARATIVE SPECIFICATION CHARTS

AWLER TRACTORS . . . 10¢

1 List covers 9 manufacturers and 45 models of tractors with horsepower ratings from 30 to 425. Other data gives dimensions, speeds, engine description, and drawbar pull.

LF-PROPELLED SCRAPERS . . . 10¢

2 Struck capacities of the 44 models listed on this chart range from 5 to 45 cu yd. Information on the prime mover includes data on engine, transmission, and operating speeds. Other data gives over-all dimensions and weight distribution. Chart covers 11 manufacturers.

ACTOR-DRAWN SCRAPERS . . . 10¢

3 Chart gives overall dimensions and general data including weight distribution and type of controls for 43 scrapers with struck capacities from 2½ to 54 cu yd built by 9 manufacturers.

EEL ROLLERS . . . 10¢

4 Tandem and three-wheel rollers with a dry weight of at least 6,000 lb are listed in this chart covering 12 manufacturers and 78 models. Data covers power trains, over-all and roll dimensions, weights, and compaction.

PNEUMATIC-TIRED ROLLERS . . . 10¢

R15 Compaction figures for 35 models of rollers are given in this chart covering 12 manufacturers. Other information covers weights, overall dimensions, wheels, and power train.

MOTOR GRADERS . . . 10¢

R16 Information on weights, dimensions, engines, and travel speeds in this chart covers 59 models of graders built by 7 manufacturers. Also included are data on blades and blade controls and scarifiers. Each 10¢

PORTABLE COMPRESSORS . . . 10¢

R17 List includes 19 manufacturers with 48 models of rotary and reciprocating portable compressors delivering 100 cfm at 100 psi or more. Information includes dimensions and mechanical data on compressors and engines.

TRACTOR SHOVELS . . . 10¢

R18 Integrally built tractor shovels are available in 93 models by 18 manufacturers. Chart includes both crawler and wheel-mounted units with bucket capacities ranging from ½ to 6 cu yd. Other information covers engines and power trains, maximum speeds, and over-all dimensions.

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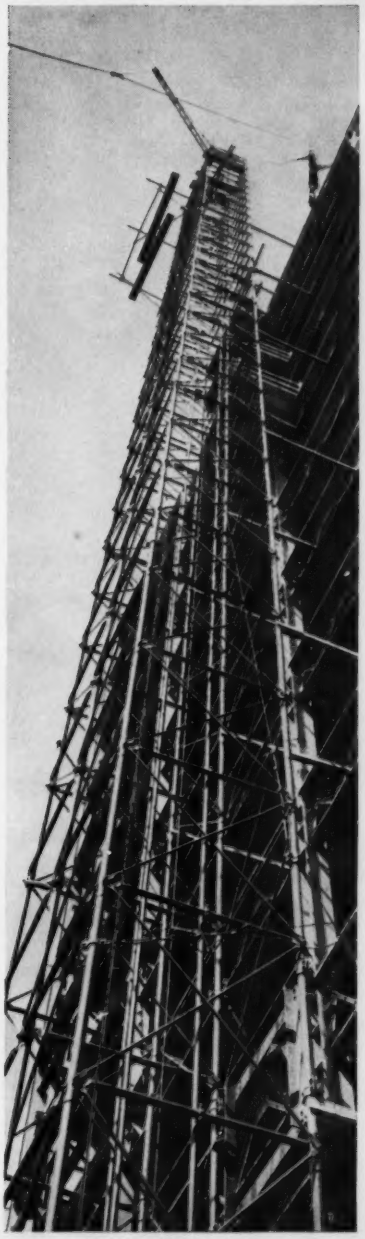
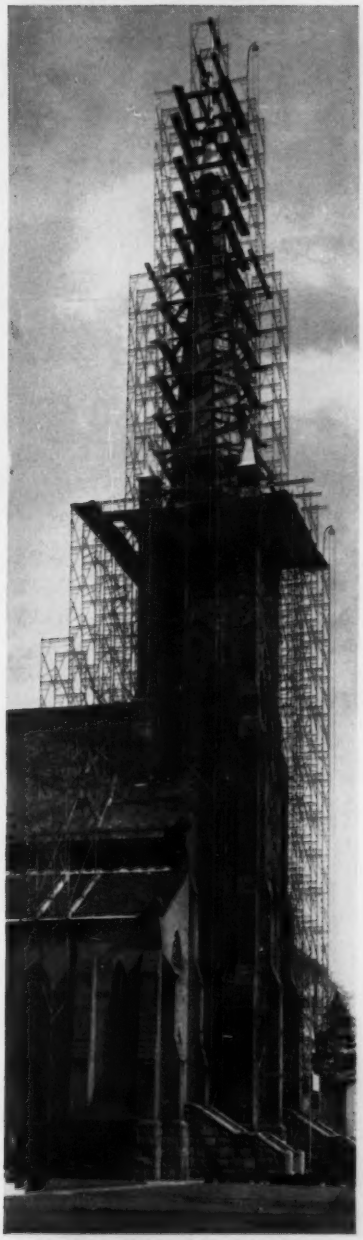
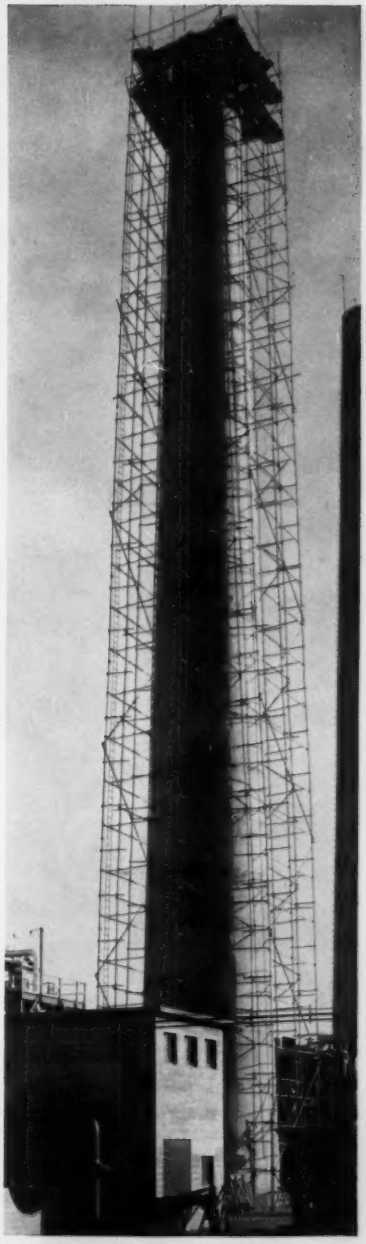


FAST MATERIAL LIFT—This 227'-high "Gold Medal"® Steel Hoist Tower is used by The Wm. Simpson Constr. Co. to move materials rapidly up when and where needed on the First Federal S. & L. Ass'n Bldg., Los Angeles.



OVERALL FOR STEEPLE JOB—To provide Eastern Renovating Contractors with safe, stable, wide, overall working platforms for steeple repairs, "Trouble Saver"® Scaffolding is built up quickly from the ground and roof of this church in Wallingford, Conn.



UP HIGH FOR WRECKERS—Here, "TubeLox"® tube and coupler Scaffolding is easily erected from only four basic parts to provide the height necessary for demolition of this concrete chimney in Torrance, Calif. Emsco Concrete Cutting Co., contractor.

Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

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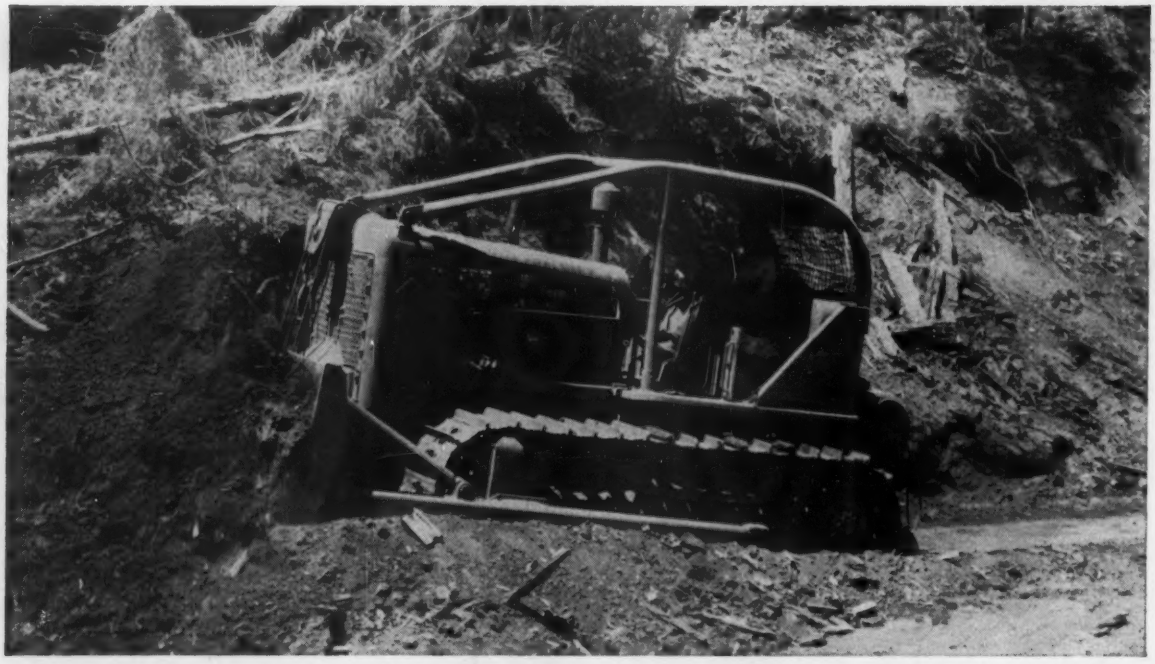
How Allis-Chalmers puts horsepower where it's needed—cuts contractors' costs



By keeping friction to a minimum in all moving parts of their compact HD-16, Allis-Chalmers engineers produced a machine that works right along side higher rated crawlers. The HD-16 heavy-duty model has 58 Timken® tapered roller bearings to practically eliminate friction in bevel gear and clutch shaft, final drive pinion, intermediate and sprocket shafts, track idlers, support rollers and truck wheels. The result is that more of its 148 horsepower is delivered to the tracks —*where it counts.*

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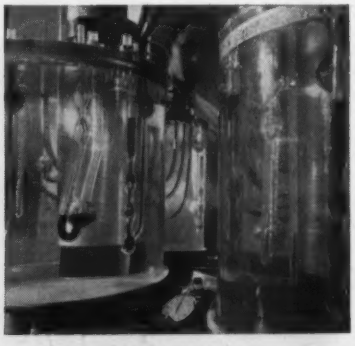

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